

California State Journal of Medicine.

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Medical Society of the State of California

PHILIP MILLS JONES, M. D., Secretary and Editor

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EDITORIAL NOTES

TUBERCULOSIS NUMBER.

The special "tuberculosis day" at the last meeting of the State Society, in Santa Barbara, was a very attractive feature of the session and drew an excellent attendance. Some of the papers evoked considerable discussion and all of them were well worth listening to and thinking about. It is, therefore, with much pleasure that they are here gathered together and presented in one number of the JOURNAL where they may be the more easily referred to in the future. It is to be hoped that the enthusiasm developed by this "tuberculosis day" will not be allowed to die out but that other meetings will see other such days. Next year there will be many medical meetings and doings in San Francisco and if those who are principally interested in this subject will take the matter in hand early enough, they ought to be able to arrange for some big meeting either about the time the American Medical Association meets there, or later on when some of the meetings of the Association for the Advancement of Science are to be held. But no time should be lost in starting the movement, if it is to be a big success.

A HELPING HAND.

Quite a number of new advertisers have come along and taken space in your JOURNAL, recently, and are to that extent helping you. Are you helping them? Have you looked through the advertising pages and noted the new advertisements? Occasionally an advertisement appears as a test of whether interest is taken in the JOURNAL advertisers or not. A few months ago we carried a page advertisement of a Chicago house offering Oliver typewriters at a very low price. Did any-

one interested in getting a typewriter take the trouble to write to this advertiser? We do not know, but two or three of this make of machine have been noticed in physicians' offices lately. Will you not try to learn that everything we advertise in the JOURNAL is guaranteed to be as represented? And that, in almost every case, you will save money by patronizing those who advertise in your JOURNAL? Furthermore, practically everything claiming medicinal properties has been scrutinized by the Council on Pharmacy and Chemistry before it is accepted by us.

Please look through the advertising pages of each issue and take as much interest in your advertisers as they take in your JOURNAL.

Recently we have begun advertisements of Melin's Food and Uncle Sam Breakfast Food, and of Mr. Platt, who is trying to build up a business in clean medicinal articles in the state; the Oaks and the Ward Sanitariums are also new advertisers and also the manufacturer of a very good glass hypodermic—and everyone of us is interested more or less in these things. If they were not good and reliable, we would not publish the advertisements. Battle Creek, too, is a large institution and you ought to know something about it; it is a non-profit paying institution and you never can tell when you may want to know of and use it. Mead Johnson has joined the advertising family; have you any idea what he offers? Look it up. Keep in touch with what is going on and with what new things are offered for your use; do this by looking through the advertisements in your own JOURNAL and by letting the advertisers know that you take some little interest in them. There is nothing undignified in this course; they are all clean and reliable and most of them can help you in some way; some of them will actually save you money, if you will take the trouble to talk over prospective purchases with them. Certainly, if you want to have a strong JOURNAL and a strong Society, one of your duties is to help in every little way that you can; this is one way in which you can help, and help a whole lot, without going to any expense or trouble to do it. Read your own advertisements and deal with your own advertisers.

RED CROSS SEALS OR STAMPS.

The National Association for the Study and Prevention of Tuberculosis sends out the following information in regard to the steady increase in the sale of red cross stamps. It is encouraging not alone because of the increasing amount of money raised but more particularly because of the fact that it shows a growing interest in the work being done, and no amount of money will do much good without the thoughtful co-operation of the people generally.

More than 44,000,000 Red Cross Christmas Seals were sold last December, according to a report issued to-day by The National Association for the Study and Prevention of Tuberculosis, and the American Red Cross. In this way \$440,000 is netted for anti-tuberculosis work in various parts of the United States.

The sale in 1913 is a gain of 4,000,000 seals over 1912, or 10 per cent. It is hoped that

this year the 50,000,000 mark will be reached. The seal design for 1914 has been selected and orders for the printing of 100,000,000 seals have been placed. Plans for the organization of a larger sale this year than ever before have been perfected.

New York State led the country last year with a sale of over 10,500,000 seals or one for each man, woman and child in the State. Of this number, more than 6,825,000 were sold outside of New York City. Ohio came next with a sale of 2,800,000, Wisconsin third with 2,700,000, and Illinois fourth with 2,500,000. Hawaii sold the most seals per capita, the total sale being somewhat over two for each inhabitant. Rhode Island came second with a sale of two per person.

Beginning with a sale of 13,500,000 in 1908, in six seasons the revenue which these little holiday seals have brought to the anti-tuberculosis campaign has more than tripled, an aggregate for the period of over \$1,800,000 or 180,000,000 seals.

TUBERCULOSIS.

No more interesting session of the recent meeting in Santa Barbara both in point of attendance and in importance, took place than that prepared by the California Association for the Study and Prevention of Tuberculosis. The papers and the discussions thereon gave evidence that the profession is awakening to the fact that tuberculosis, far from being a solved problem, is one of the greatest, if not the greatest question at present confronting it. It is to the discredit of scientific medicine that the great sociologic and economic questions involved have been of late left largely for their solution to the laity. Not only is this true, but the profession as a body has been inattentive to the problems of early recognition and scientific treatment of the disease. The charge can be brought more directly home when one sees the indifference manifested by the medical schools in the teaching of the subject. One does not have to go far to get a practical demonstration of that fact. The San Francisco Tuberculosis Clinic with a large daily clinical material is almost entirely neglected for teaching purposes, although this material belongs to and is at the disposal of the medical schools; is, in fact, attended by clinicians appointed by these schools. It is not surprising that the profession at large fails to appreciate the importance of the subject when its ranks are being annually supplemented by men whose medical education is being neglected to a large extent in this respect.

It was therefore a matter of great satisfaction to those in charge of the session to see the awakened interest manifested at this meeting. A number of the papers appear in this issue of the JOURNAL. Of the many excellent features brought out probably the most significant was the emphasis on the importance of and the great incidence of tuberculosis in children, and the fact that the disease shows itself primarily as a lung root infection in the bronchial and tracheo-bronchial glands. The statistics of Escherich and others show that 90% of town children are infected with tuberculosis by the time they have reached ten years of age, the vast majority of these having their foci in the thoracic glands. Hamburger in Vienna among 86

cases of localized tuberculosis found the primary lesion in the bronchial glands in 85. The practical lesson to be drawn from this is a two-fold one. Tuberculosis in adults is seldom a primary lesion, and we must depart from our preconceived idea of an incipient tuberculous infection in adults and recognize it for what it usually is, namely, a super-infection or an exacerbation of a pre-existing latent lesion acquired during childhood. The other lesson is the necessity of recognizing and properly treating these patients at a period when the disease is first demonstrable. If one compares the modern diagnosis and treatment of tuberculosis and syphilis, the thoroughness relatively with which the latter disease is handled is brought strongly forth. A Wassermann reaction shows no more clearly the presence of the spirochete of Schaudinn, than does a positive tuberculin test in a child show the presence of a tuberculosis infection. Why the one should demand a thorough course of anti-syphilitic treatment, and the other be relegated to a careless regime of what is popularly called hygienic treatment, which is the usual course, is one of the puzzling phenomena which thoughtful students of tuberculosis fail to understand. The time to treat tuberculosis is when it first becomes demonstrable. Thanks to improved methods in examination, and particularly to improved technic in Roentgenology the recognition of tuberculosis in children has been placed on a much more scientific plane. This fact places the responsibility much more securely on the profession. If tuberculosis is to be eradicated, it must be by the recognition and eradication of the disease before it becomes a focus of dissemination. While the masses and the legislatures grapple with the problem of prevention from the standpoint of housing, isolation, factory inspection, etc., scientific medicine, if it fulfils its duty, must recognize the disease and eradicate it before it becomes a danger to others. This is the most important problem in the prevention of tuberculosis which to-day confronts the physician individually.

ITEMS ABOUT MEDICAL SCHOOLS.

Two items referring to medical schools, Johns Hopkins and the Medical Department of Stanford, appear elsewhere in this number of the JOURNAL. We are particularly interested in the letter of Dr. Vaughan for it refers to Stanford. The JOURNAL has at various times commented on the existence of two high-class medical departments of universities in our state and has deplored, in a purely impersonal way, the apparent waste which this duplication would entail. The possible amalgamation of the two schools has been the subject of many conferences and it appears that such a consolidation is impossible, at least at the present time. Such being the case, we can only agree with Dr. Vaughan in congratulating Stanford that it has such an excellent department and wish to both of these medical departments the very best success in carrying out their work. Perhaps, after all, it may be better to have two sturdy, healthy, well-grown medical departments than one; who can say? It is hard work, to be a prophet.

THE ATLANTIC CITY SESSION OF THE A. M. A.

The last annual session of the A. M. A., at Atlantic City, was a very successful one in every way. The sections all had good programs and the attendance at the sections, as well as the general registration (about 4,000), was very good indeed. Except in one or two instances, there was little acrimonious discussion or fighting about anything, in the House of Delegates, and a great deal of business was done promptly and well and with what should prove to be most excellent results. The Trustees sounded a warning in regard to expenditures and the necessity for curtailing some of the too rapidly growing activities of the Association, and this was well accepted by the House and commended. An application was made to the Trustees to have the Association, through the Board of Trustees, be the custodian of and hold in trust, patents on surgical instruments, appliances, and the like. The basic idea is simple; it is not considered ethical for a physician to patent and derive a revenue from such articles as are intended for the general good of the people; and yet, if they are not patented, any unscrupulous person can make them improperly and thus do great harm to the user and to the patient. This was referred to the Judicial Council and they made the following recommendation to the House of Delegates, which was adopted:

Resolved, That the Board of Trustees of the American Medical Association shall be permitted to accept, at their discretion, patents for medical and surgical instruments and appliances and to keep these patents, as trustees, for the benefit of the profession and the public; provided, that neither the American Medical Association nor the patentee shall receive remuneration from these patents.

The Committee to Consider the Mode of Commemoration of the Completion of the Panama Canal, made the final report and recommendation embodied in the following resolution, which was carried:

Resolved, That the House of Delegates set aside a day during the next Annual Session of the American Medical Association to be designated as "Honor Day" in recognition of the services of the men living or dead whose contributions to sanitary science and preventive medicine have made possible the construction of the Canal, and on that day a general session of the American Medical Association be held to which the public shall be invited.

OFFICERS ELECTED.

The following officers were elected by the House of Delegates of the A. M. A.:

President-elect, William L. Rodman, Philadelphia; First Vice-President, D. S. Fairchild, Des Moines, Iowa; Second Vice-President, Wisner R. Townsend, New York; Third Vice-President, Alice Hamilton, Chicago; Fourth Vice-President, William Edgar Darnall, Atlantic City, N. J.; Secretary, Alexander R. Craig, Chicago; Trustees, Philip Marvel, At-

lantic City, N. J.; Philip Mills Jones, San Francisco; W. T. Sarles, Sparta, Wis.; Chairman of the Committee on Transportation and Place of Session, J. R. Pennington, Chicago.

The President then nominated and the House confirmed the following: Member of the Judicial Council, Alexander Lambert, New York; Member of the Council on Health and Public Instruction, H. M. Bracken, Minneapolis; Member of Council on Medical Education, Arthur Dean Bevan, Chicago.

After considerable discussion, and in spite of the fact that the Committee on Transportation and Place of Session recommended Chicago, San Francisco was substituted for Chicago in the report and then chosen as the place for the 1915 session, the time to be fixed by the Board of Trustees.

AMERICAN MEDICAL ASSOCIATION—SAN FRANCISCO, 1915.

Largely to aid in commemorating the fact that scientific medicine and sanitation based thereon dug the Panama Canal, the American Medical Association by its House of Delegates at the Atlantic City session in June last, voted to hold the meeting for 1915 at San Francisco. The time will probably be the third week in June, 1915. This will be the fourth time the Association has met on the Pacific Coast; in 1894 it met in San Francisco and all of the various sections held their meetings under one roof; in 1905 it met at Portland, Oregon; in 1911 it met in Los Angeles; next year it will again meet in San Francisco, after 21 years, and again all the sections will meet under one roof. The Exposition directors have kindly placed the huge auditorium at the disposal of the Association for the third week in June, and here can be housed the registration booths, the scientific and commercial exhibits and all the various sections, concentrated under one roof. The general session could be held in the same building, but there might be some disturbing noise or confusion and so it seems better, at the present time, to have this session in some down-town theatre, as is the custom. This meeting of the Association at the time of the Exposition should not be regarded as a local affair confined in its interest to San Francisco alone; it is of the greatest interest to the whole Pacific Coast and all the coast cities should take an active interest in it and in making it one of the largest attended sessions of the Association on record. There is a lot of work to be done, but we of the coast are good workers, and hospitable withal, and we must not take the least chance in letting our eastern visitors go away with any lowered impression of California hospitality. Great praise is due to our delegates to the Association, Drs. Ellis, Vecki and Hare, and especially to Dr. Hare, who got up out of a sick-bed to attend the session of the House of Delegates and made a speech for San Francisco that everybody spoke of as being most remarkably eloquent. Let us forget everything except that our guests will be with us before we know it, and prepare to make them right royally welcome to our Golden State.

BOARD OF MEDICAL EXAMINERS.

The State Board of Medical Examiners has officially disapproved of the Los Angeles College of Osteopathy and the Pacific College of Osteopathy (Los Angeles), (the only two osteopathic colleges in California), so that none of their graduates are permitted to take the examination for the unlimited or "physician and surgeon" licenses, which they demanded. Graduates of osteopathic schools may *not* take the "physician and surgeon" examinations. They may, however, apply for the "drugless practitioner" examinations provided by the Medical Practice Act. The Pacific Medical College of Los Angeles was denied any sort of recognition. It is understood that these institutions are now suing the board to compel recognition.

It is well recognized that the most important test is that which includes a very careful investigation into the sort of training (medical and pre-medical) that the applicant has had. That part of the law which makes it necessary for a college to be "approved by the board" very effectually eliminates the diploma mill evil.

DANGER!

On another page, because received too late to go in here, is an official statement of the proposed attack on all restraint of the practice of medicine. Read it carefully and try to educate all the voters you come in contact with.

96 PAGES.

Just note that this issue of the JOURNAL carries 96 pages and a lot of up-to-date material on Tuberculosis. Your advertisers help to make it possible; why not help them?

COUPONS.

One kind of coupon that it is profitable to cut off, is the corner tag on the advertisements you see in your JOURNAL. Why not cut some of them off and send them to the advertiser, thus letting him know that you are interested? And where there are no coupon-tags, why not drop a postal or a letter? You will be helping yourself.

ADDRESS OF THE PRESIDENT OF THE CALIFORNIA ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.*

By ROBERT A. PEERS, M. D., Colfax.

Gentlemen of the Medical Society of the State of California:

On behalf of our society, The California Association for the Study and Prevention of Tuberculosis, I wish to thank you for your liberality in granting us one-third of the time allotted for your state meeting for a scientific program upon the subject of tuberculosis; and also, on behalf of our Association, I extend to you a hearty invitation to partake in the discussion of the papers to be presented to you to-day.

Our Association has for several years been struggling against odds to do its share in the great battle against tuberculosis and to establish the California society in its rightful place in the vanguard of the fight. This rightful position, I am sorry to state, we have thus far been unable to attain. That this is so, we feel satisfied, is due in a large measure to the apathy of the general practitioner, the ignorance of medical subjects among the laity, the general belief in the efficacy of climate to the exclusion of other therapeutic measures which has made, in the minds of many, every California town a resort; and last, but not least, a slight leaning toward commercialism as shown by the attitude of the men especially skilled in the diagnosis and treatment of this disease. Thus it has happened that, while many states much less favorably situated, where natural advantages are considered, have large and thriving societies for the study and prevention of tuberculosis and liberally equipped and well managed state institutions for the treatment of the tuberculous, we, in California, living in a climate that is renowned throughout the world as unsurpassed, a state into whose coffers are poured millions from the pocket-books of wealthy tourist health-seekers, have a struggling association for the study and prevention of this disease and no state institution for the treatment of the tuberculous poor.

It has been the aim of our society during the past year to try to devise means by which the condition of affairs may be bettered and by which we may be enabled to more successfully solve the tuberculosis problem that confronts our state. With this end in view it was decided to present at this meeting a scientific program, and your body, as I have said, most generously gave us one entire day for this meeting.

The tuberculosis situation presents, it seems to me, two distinct problems for solution: First, the prevention of new cases—to be brought about by education; second, the caring for those already ill. The first problem, education, must be considered from two standpoints: First, the education of the medical profession; second, the education of the laity. The education of the medical profession regarding the diagnosis and treatment of tuberculosis is a much more urgent matter than you, who

* Held jointly with the Forty-fourth Annual Meeting of the Medical Society of the State of California, Santa Barbara, April, 1914.

attend medical meetings regularly and thus come in contact with the better informed members of the profession, can appreciate. If you have any doubts on the subject you have but to search the records of any institution devoted to the treatment of this disease to realize the great need in this respect. The education of the profession can be brought about by higher standards of medical education with, at least, one specialist on tuberculosis on the staff of each medical college and a larger percentage of the time allotted by the curriculum for the study of the disease that kills one of every seven people who die in this state; the presentation of a symposium upon tuberculosis at each meeting of the State Medical Society, the authors of such papers to present them by invitation; and the holding of a tuberculosis meeting once each year by each county society, at which meeting the subject of tuberculosis will be discussed by men chosen because of their special knowledge of the subject. The education of the laity will, perhaps, be carried on by means of medical superintendents and the visiting nurses of the various local dispensaries which must be established in the state if we are to control the disease, and by the aid of popular lectures to be given by trained talkers equipped with a synopsis furnished by an editing committee in order that the misstatements of enthusiastic and zealous, but misinformed, crusaders may not hinder the work; by teaching prevention of the disease in every grammar school, high school, normal school and university, so that the people will know and demand high-class work on the part of the profession—a public that will demand a genuine examination of the chest instead of a cough medicine when seeking advice because of a cough, that will not be satisfied with a diagnosis that the blood of a hemoptysis came from the back of the throat, or that the tired feeling, slight fever, and loss of weight are due to malaria, unless the examination of the blood shows the plasmodium, but will know that such symptoms are frequently the result of the activity of the tubercle bacillus. In connection with the education of the laity I will not deal with, but barely mention insurance against tuberculosis, as this subject will be dealt with by one of the other members of the society later in the day.

The second part of this problem, the caring for those already ill, is one of great magnitude and requires the expenditure of large sums of money. The time at my disposal will permit me to but touch upon the various means of caring for tuberculous patients. I am in hopes that Dr. Howard, of the State Bureau of Tuberculosis, will go more fully into the subject. In my opinion there is urgently demanded the following equipment for the care of the indigent tuberculous:

1. Dispensaries which shall be places for diagnosis and for the disposition of cases, with proper medical supervision and aided by competent visiting nurses.
2. Sanatoria for the care of early cases of tuberculosis and such as give promise of recovery.

3. Hospitals for advanced cases.

4. Some method of treatment for patients too far advanced to admit of their reception at the sanatorium, but not so far advanced as to be hopeless or subjects for hospitals; these cases to be treated at home under supervision of the visiting nurse or in day or night camps.

In passing, I will state that while many patients who will be taken care of in day and night camps might be better taken care of in a sanatorium, such patients are to be found in such numbers, in the thousands, that it would be an economic impossibility to receive them all in a sanatorium. And again, the night camps may also be used to give meals and outdoor sleeping quarters at night for workers who have been discharged, as arrested from the sanatorium and who wish to continue the sanatorium regime as far as possible while working.

This method of handling the tuberculous was presented by me a couple of years ago in a paper presented before a meeting of Health Officers held in conjunction with the League of California Municipalities, and is in substance similar to that offered by the Tuberculosis Commission one year ago. As stated above, such a plan will require a great deal of money, and it is impossible at the present time to get any legislature to appropriate sufficient money to carry it out. It has been decided, therefore, to circulate a petition and invoke what is known as the Initiative, thus getting the subject before the people on the ballot at the coming November election. The amount asked for will be one million dollars, and your assistance will be asked later to-day and also during the campaign.

I will touch very briefly upon the activities of the society during the past year, because this will be gone into in more detail by the Secretary in his report. Your President endeavored to secure the formation of more local societies during 1913-14, but abandoned this mode of attack because of the general apathy amongst the profession and the laity. Thereafter he devoted most of his time to giving addresses and the preparation of the scientific program which will be presented to-day. In all, thirteen addresses were given as follows:

Medical Societies	2
Nurses' Association (San Francisco).....	1
Summer Session (University of California)....	1
Class in Hygiene (University of California)...	1
Churches (Tuberculosis Sunday).....	3
Normal School (Chico).....	1
High School (Mountain View).....	1
Grammar School (Mayfield).....	1
Anti-Tuberculosis Association (Berkeley).....	1
Tuberculous Prisoners (San Quentin).....	1

13

As a direct result of the talk to the tuberculous prisoners at San Quentin, together with two subsequent visits followed by talks with the prison physician, warden, and members of the Board of Prison Directors, the sum of three thousand (\$3,000) dollars was appropriated for the con-

struction of a tuberculosis ward for the prisoners confined in the State Prison at San Quentin.

Tuberculosis Sunday was called to the attention of the Governor, resulting in an official announcement of December seventh as Tuberculosis Sunday.

In closing I would like to make a few suggestions which I believe, if carried out, would enable our society to do more efficient work. Lack of time forbids going into details and I shall merely give an outline of the various measures I believe might, with profit, be adopted:

First, I believe it would be well to return to a closer union between the state and local societies for the study and prevention of tuberculosis, with a certain definite yearly membership fee, the proceeds of which may be divided upon a percentage basis satisfactory to the state society and the local associations.

Second, the society should issue bulletins and co-operate with the State Bureau of Tuberculosis and the State Board of Health.

Third, there should be a full time executive secretary under salary who should be in constant touch with and work in harmony with the President; until the funds of the society will warrant, such secretary may be merely stenographer to the President. This would be no more expensive than the present system, which, because of the geographical location of the homes of the President and the secretary, has gone far toward defeating the efforts of two zealous workers to make a marked success of the work of the Association.

Fourth, I most earnestly urge the use of the funds of the society for the purpose of getting the Tuberculosis Initiative petition on the ballot and securing its adoption by the people.

Finally, I would urge the co-operation with the other southwestern states in the securing of a Federal Hospital to accommodate the tuberculous poor who are sent to the west and the southwest in hope of benefit from climatic change and who have heretofore become a charge upon the bounty of the several communities upon which they have been inflicted.

In conclusion, I wish to thank those responsible for the great honor conferred upon me in electing me President of the California Association for the Study and Prevention of Tuberculosis, an honor, I fear, much more appreciated by me than deserved.

THE CALIFORNIA ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

SECRETARY'S REPORT FOR 1913-1914.

By GEORGE E. TUCKER, M. D., Riverside.

During the year 1913-14 the work of the California Association for the Study and Prevention of Tuberculosis as carried on by the Secretary has consisted largely of a duplication of the work of previous years.

Inasmuch as the Secretary had been instructed at the last annual meeting to exert his best efforts

to bring about the formation of new societies in the state, during visits made by him to various County Medical Societies, an effort was made to interest the officers and members of these societies in the anti-tuberculosis society movement. Definite promises to organize local units were given and followed by correspondence at Ukiah, Roseville, Fresno, Modesto, Pomona and San Bernardino and Santa Cruz. Lectures were delivered at Ukiah, Roseville and Modesto, and in each instance the enthusiastic organization workers explained that it did not seem advisable to try to form a unit in their locality when definitely asked to fix a date to bring about the perfection of an organization.

Having failed to interest the health officers in various sections of the state in this work, I felt warranted in taking the matter up with the various County Medical Societies through their secretaries, and, accordingly, addressed a communication to the secretaries of the counties where no such organization existed. From Shasta County the reply stated that there would not be sufficient interest to support such a unit because there was so little tuberculosis in that section. From Butte information was forwarded that such an organization did not meet with the favor of the county doctors and that there was very little tuberculosis in that part of the state. From Watsonville further information was requested and after having been submitted there was no reply.

My efforts to interest Secretaries and members of Medical Societies met with the same result as was experienced last year when an attempt was made to form new organizations through enlisting the co-operation of health officers. In each instance the Secretary called the attention of the correspondent to the work that the State Association has been trying to do and that there should be one or more local societies in every county of the state, that the President or Secretary would visit their locality and bring about the formation of such an organization if arrangements could be made for a public meeting and if in their opinion enough interest could be aroused to carry on the work after such an organization had been perfected.

The bi-monthly National Press Notices have been mailed regularly to about five hundred newspapers in the state but it has been impossible to determine the extent to which these notices have been given publicity since the State Association does not subscribe to a clipping bureau.

Since December 1913 correspondence has been carried on with the Governor in regard to the appointment of a committee from the State of California to assist the Southwestern Conference on Tuberculosis in the passage of a bill providing for Federal Hospitals for the care of the tubercular sick in the Southwestern States. Governor Colquitt of Texas has requested that the Governor of the States of Arizona, California, Colorado, Kansas, Nevada, New Mexico, Oklahoma, Texas, Utah, each appoint a committee of eleven members consisting of two Senators, two Congressmen,

two business men, two doctors, two ladies and the Governor. Eight Governors had already complied with this request, but Governor Johnson had not seen fit to make such appointments. A number of letters were exchanged through the months of January, February and March and on March 20th notification was received from the executive office at Sacramento that the following committee was appointed:

Hon. George C. Perkins, Hon. Jno. D. Works, Hon. Wm. D. Stephens, Hon. Jos. R. Knowland, Dr. George H. Kress, Dr. Philip King Brown, Mrs. Samuel Brust and Miss Katherine C. Felton, making eight members, when eleven had been requested. The two vacancies have not been filled and this Association is authorized to complete the appointment of this committee.

The Red Cross Seals campaign was carried on as in previous years.

A new supply of circulars of information regarding the methods of preventing the spread of tuberculosis were ordered printed, repeated requests for these leaflets having been received throughout the year.

Of the five bills recommended by the Tuberculosis Commission appointed by the State Board of Health and passed by the legislature, but one was signed by the Governor. Your Secretary worked faithfully during the entire session of the legislature for the passage of these measures, participating in all of the hearings before the various committees and lobbying for votes on the floor of both houses. The bill which became a law provided for the establishment and maintenance of a department of tuberculosis under the direction of the State Board of Health. The Governor refused to sign other measures because of difficulty of financing the operations of the provisions of the bills.

Riverside, Cal., April 25, 1914.

Dr. Philip Mills Jones,
San Francisco, Calif.

Dear Doctor:—Enclosed please find copy of my annual report as Secretary of the California Association for the Study and Prevention of Tuberculosis.

The papers presented at the meeting were discussed by the following men:

Dr. Edw. von Adelung, of Oakland; Dr. John C. King, of Banning; Dr. Philip King Brown, of San Francisco; Dr. Voorsanger, San Francisco; Dr. Jackson Temple, Santa Rosa; Dr. Boardman, San Francisco; Dr. C. C. Browning, Los Angeles; Dr. G. H. Kress, Los Angeles; Dr. F. M. Pottenger, Dr. Howard, Sacramento; Dr. G. G. Moseley, Redlands; Dr. Dunn, San Diego; Dr. Gillihan, Oakland; Dr. Strietmann, Oakland; Dr. Ely, San Francisco; Dr. G. H. Evans, of San Francisco; Dr. Carling, of Los Angeles; Dr. Watkins, of San Francisco; Dr. Page, Berkeley, Dr. Martin.

Yours sincerely,

GEORGE E. TUCKER,
Secretary.

THE EARLIEST MANIFESTATIONS OF TUBERCULOSIS AND TREATMENT.*

By GEO. E. EBRIGHT, M. D., Instructor in Medicine, University of California, San Francisco.

The diagnosis of early pulmonary tuberculosis in this discussion may be defined as the recognition of a focus of incipient tubercular inflammation, and also the recognition of the first advances of a recrudescence of an arrested or latent lesion. It is axiomatic in tuberculosis that the greater the number of early diagnoses, the greater will be the number of recoveries; conversely, it may or may not be an hyperbole to state that the presence of advanced tuberculosis presupposes failure of early diagnosis, allowing of course for the virulence of the infection and the fighting qualities of the patient's organism. However, it does not require the force of exaggeration to emphasize the all too patent fact that in a most pitifully deplorable number of instances lives are lost because the physician has not made himself familiar with the easily elicited signs of beginning tubercular infection. Advanced tuberculosis may also mean neglect upon the part of the medical adviser to enforce a rigid regime of treatment at first. Misdirected pity too often compromises judgment.

Incipient tuberculosis does not manifest itself by any one pathognomic sign as does the advanced disease by the presence of Koch's bacillus in the sputum, but its recognition depends rather on the scrutiny of a complex picture the parts of which are with painstaking care elaborated from the history of the patient's family and his associates, the story of his former life, the various subjective symptoms of which he may be aware and the physical changes produced by his malady. In a word, the secret of early diagnosis depends upon adherence to a systematic scheme of case-taking and then a consideration of the patient's rational symptoms and the physical signs.

A word about tuberculosis in children. The work of Von Pirquet laid the foundation for the now generally accepted dictum that by the age of sixteen years practically all children have had tuberculosis, so the disease of the adult is very likely to be a lighting up of a previous infection which an attenuated state of the individual's resistance or a reinfection by repeated contact with other tubercular individuals and the onslaught of overwhelming numbers of bacilli has brought about. Such lowering of resistance frequently follows measles and whooping cough in children or typhoid, over-fatigue, etc., in the adult. The consideration of tuberculosis in children means particularly a search for glandular tuberculosis, especially swelling of the glands at the base of the lung and in the mesentery.

Peribronchial adenitis often causes chronic dyspnea; percussion may elicit dullness in the region of the sternum; the radiogram shows a mediastinal shadow and the tuberculin reaction the nature of the lesion. In children as well as in adults it cannot be too greatly emphasized that every patient

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showing loss of vitality, diminished nourishment, apparent anemia and unwarranted fatigue should be regarded as tubercular until the disease has been carefully excluded. Children in California at least, dying from marasmus, will be found upon autopsy to be in a very large percentage the subjects of tuberculosis.

The history of the adult patient therefore requires a careful search for periods in which he has suffered from diseases lasting some time, particularly stages of low nourishment, prolonged convalescence from infectious diseases (as whooping cough and measles), or pneumonia, or typhoid, an indefinite history of malaria, the existence of that condition referred to in young people as growing too fast, particularly if associated with febriculae or cough.

Inherited tendencies are to be demonstrated by examination into the family history for at least two or possibly three generations. The presence of tuberculosis in the immediate family is not only of importance as an indication of low fighting qualities, but more important is it that repeated contact with active tuberculosis in the household speaks strongly of an acquired tuberculosis. Children subjected to such an atmosphere can hardly escape the infection. The important subject of carriers is suggested in this connection. It is being more and more recognized that tubercular patients while harboring an active infection may develop such a high degree of resistance that the disease makes no advancement for long periods of years. Such a person becomes an especial source of danger to his associates going about as he does with a chronic cough and a continual expulsion of tubercle bacilli. For example, a young man of about twenty-five, after an injury to his chest developed pulmonary tuberculosis, fatal in a few months. He lived in a small, poorly ventilated house with his mother, a woman of about fifty-five, who from her early life had had a chronic cough, undoubtedly chronic tuberculosis, from which circumstance it is easy to understand how the son with a suddenly lowered resistance developed his trouble. This case further demonstrated the point that persons with a latent or low-grade infection may be overwhelmed by exposure to those with more active disease, as the woman in this case while taking care of her son developed a very lively exacerbation of her trouble and died within the year. Carriers are not only a menace to members of their own family but also to outsiders with whom they may be in more or less continual contact, as, for instance, in places of work, particularly if these be unhygienic.

Among the symptoms which occur early are to be noted lung pains, or merely a feeling of the presence of the lungs, or a sensation of constriction of the chest. Many patients complain simply of being tired. Questioning reveals a loss of weight which possibly had not been noticed; the appetite may or may not be impaired, the illness of the patient is very frequently suggested in that he appears anemic, but an examination of the blood fails to reveal its impoverishment. The pulse rate is likely to be fast even when the

patient has no fever, and in the presence of fever the increase of pulse rate is very often found to be more than the usual pulse temperature ratio of eight beats per minute increase for each degree of fever. It has been noticed that in the first and second stages of tuberculosis the heart is found to be small in size. Whether this is the result, as hardly seems probable, of the influence of the disease, or whether on the other hand a small heart predisposes to tuberculosis is a question. Observation of the body temperature is an extremely important matter. The temperature should be measured every two hours for a period of at least four or five days. In most cases it is necessary to confine a patient to bed during this time. The presence of a small amount of fever is thereby easily detected, and also of much importance is a sub-normal morning temperature of 97° or less. It is clearly not sufficient to rely upon a single estimation of the temperature, as it may easily happen that at any one time the body temperature is at normal point. Ordinarily mouth temperatures are sufficiently accurate, but it is necessary nevertheless that the patient be carefully instructed in the manner of using the clinical thermometer. Chills, except in acute pneumonic tuberculosis or miliary tuberculosis, seldom occur.

The physical examination of a patient should be made in a warm room and the patient should be at ease, not only in body, but the excitement and nervousness to be expected on the part of a patient at the time of such an examination should be obviated as much as possible. For instance, the pulse rate at the first examination if found to be fast may be entirely due to nervous influences, but the exercise of tact on the part of the examiner will have brought about during the conversation incident to eliciting the patient's history a state of mind in which the patient feels as much at ease as may be. Preferably the patient is seated upon a stool facing the examiner, for in the recumbent position allowance must be made for the pushing forward of the clavicles; the examination of the back is also much more readily made with the patient upright.

Dilated pupils, a mark of toxicity, speak for an unfavorable prognosis, especially in children. It has been claimed that the pupil on the affected side may be dilated, but this is an unreliable sign. However, pressure of the mediastinal glands may cause unequal pupils. Incidentally, tracheo-bronchial adenopathy sometimes is the origin of violent paroxysmal cough or pain in the tip of the shoulder of the affected side. There is no distinctive type of tubercular chest, tuberculosis being found in all, although a paralytic chest speaks for inherited predisposition. There has been observed ossification of the first rib at the costo-sternal joint with shortening of the rib. Hart associates this with restricted apical movement and greater susceptibility, and believes that it may be inherited or acquired. In very many cases of early pulmonary tuberculosis asymmetry of the chest movement is noted. Pottenger has called attention to the state of spasticity of muscles—early lesions causing spasm of the overlying muscular structure

which later goes on to atrophy. There is no doubt of the value of this observation, but it requires considerable skill for its detection. Muscular atrophy occurs very early in tuberculosis and would seem to have more to do with the cause of the muscular spasm than with the presence of pleural adhesions. This flattening of the muscle can readily be seen in the regions of the clavicles or of the scapula. It is not often that important deductions may be drawn from the vocal fremitus as in the beginning its changes are not greater than may be physiologically present. Percussion dullness occurs early, but in many instances it should be possible to make a diagnosis before the occurrence of an appreciable change of percussion note. Of more importance is the retraction of apical excursion and diminished movement to be found at the bases of the lung. In estimating the pulmonary excursion at the base observations should be made upon both sides in front of the chest and both sides posteriorly. The lower border resonance being ascertained, the skin is marked at that point and the patient instructed to take a full breath, and while he holds it the new lower limit of resonance is determined. Should there be no or little excursion—less than the normal two and one-half inches posteriorly, but a deepening of the percussion tone upon deep inspiration brought about by increased air volume from the lowering of the diaphragm—pleural adhesions may be suspected.

Auscultatory alterations of the breath sounds are of immense importance. When tubercular infection begins changes occur in the walls of the smallest air passages, giving rise to breath sounds which change as the process advances. The first alteration is found to be a roughening of the inspiration, or faint breathing or interrupted breathing. This is followed, as consolidation occurs, by harsh breathing—that is, the inspiration is harsher and the expiration longer and higher pitched. This passes on to broncho-vesicular breathing; later comes bronchial breathing. If consolidation is complete, as is rarely the case in tuberculosis, but common in pneumonia, the breathing may assume a tubular character, and finally, the most pronounced change is amphoric breathing.

In a diagnosis of the very earliest tubercular changes especial attention is given to rough breathing. It has been described by Klebs as similar to the sound made by passing the fingers over the beads of a rosary. It approaches interrupted breathing, it is not high-pitched, it sounds as if soft mucous rales were nearly present. This type of breathing, or cogwheel breathing, or faint breathing, may be heard before consolidation takes place, or, in other words, before a change of percussion note occurs. It means simply a catarrhal inflammation of the bronchioles, but its importance lies in the fact that it is persistent, that it is apt to be found at one or the other of the apices of the lung, (the axillary vault should not be overlooked), that it is associated with a slight degree of fever, that a tuberculin reaction is apt to be present, and that it may be differentiated from atelectasis such as is found in the resolving

stages of an influenza pneumonia or a slow pneumonia due to diplococcus catarrhalis, syphilis of the apex, or the resolving stage of such a bronchitis as is found, for instance, in anemic girls. Taken into consideration with the history and symptoms, this rough breathing is one of the most convincing evidences of incipient tubercular inflammation. Patients, however, are not frequently seen at this time. Usually a slight degree of consolidation has taken place and there is a slight change of percussion note, together with a few dry crackles upon the end of the expiration. In order to elicit these, it is often necessary to have the patient cough at the end of deep expiration when they will be heard at the end of the succeeding deep inspiration. Rough breathing is especially important if heard during ordinary respiration. Dry crackles should be differentiated from crepitant rales. They are only few in number while crepitant rales occur in flocks. There is little difference between the sound of an individual crackle and an individual crepitation except possibly the fine crackling rales seem dryer or sharper. Ten or fifteen years ago harsh breathing and crackling rales together with an impaired percussion note were considered the earliest signs of apical tuberculosis; at the present time, however, the presence of harsh breathing and crackles indicate that the patient is no longer in the first stage. The diagnosis should be made before the appearance of rales and before there appears percussion dullness. Harsh breathing is sharp and more blowing and generally more marked in expiration; a few sibilant rales may be heard before actual consolidation of the air vesicle takes place and are of course generated in the bronchioles. Crepitant rales must not be confused with friction fremitus. However, there are sometimes sounds generated in an area of pleuritis which greatly resemble crepitations, and in many instances it is impossible to say whether the sound should be classified as a rale or frictional rub. It is satisfactory and advisable to adopt Klebs' classification and call these friction rales and the interpretation to be placed upon them is that they should put the examiner more upon his guard against pulmonary tuberculosis, as, whether they occur in the pleura or in the lung they are extremely apt to be of tubercular origin.

The recognition of a recrudescence of an arrested process rests very largely upon the patient's symptoms. Loss of weight, early slight fever and all symptoms expected in early tuberculosis put one immediately on guard and the presence of crackling rales determines the presence of renewed activity. The attending physician, as well as the patient with the knowledge that he has been tubercular, is always on the lookout for a recurrence, so that as a rule the process does not go very far before recognition.

Examination of the chest is not complete without a fluoroscopic or skiagraphic examination. The fluoroscope is chiefly useful in the assistance that it gives in determining the movement of the lungs. However, on account of the danger to the operator it is not generally to be advocated. The skiagraph shows tubercles as single light sago-like shadows,

but the X-ray examination must necessarily be interpreted in the light of rational symptoms and physical signs, and where they do not agree, the findings of the x-rays give way to the other methods of examination. Of emphatic value is the skiagraph as a record of the progress of the disease.

The tuberculin reaction¹ is still a subject of considerable controversy. It has been the writer's practice to avoid if possible those tests which are in any way attended with risk to the patient. For that reason we feel that with experience the cutaneous reaction will serve in most cases where the diagnostic use of tuberculin is indicated. The advantage of the ophthalmic reaction may be urged as being a better indication of an active lesion than the cutaneous reaction, but it has the disadvantage of being, in rare instances, fortunately, attended by an unduly severe inflammation, and also that an instillation sensitizes the eye so that a subsequent test may be misleading. It is of course recognized that the skin reaction is positive in a majority of healthy subjects. A reaction under two years of age is of positive value, as shown by Von Pirquet. The negative test in the adult speaks against tuberculosis. There are certain exceptions to this rule. The reaction is absent in measles, more or less absent in scarlet fever, is less in pregnancy, and may be absent after a pulmonary hemorrhage. One cannot accept Pottenger's explanation that the cause of the absence of tuberculin reaction after a pulmonary hemorrhage in the initial stages is due to the discharging of a tubercular focus and removal from the organism of the toxic substance which caused the formation of the specific antibodies. If that were true it should be expected that healed tuberculosis should leave no reaction whatever. It seems more probable that after a severe hemorrhage the rapidly increasing formation of new blood either attenuates the antibodies or so influences them that the reaction is not perceptible. Concerning the subcutaneous injection of tuberculin for diagnosis, it seems proper to take a stand with those who advise against its use. There is not only the danger of sensitizing the patient to tuberculin and precluding its therapeutic use, but there is always a possibility, particularly when the febrile reaction is high, 103° or 104° Fahrenheit, of a non-subsidence of the focal reaction. Before leaving the subject of tuberculin tests, the writer desires to call attention to a guinea pig test advocated by him three or four years ago in which suspected tubercular material, as for instance, pleural fluids, may be injected into a series of guinea pigs and at the end of from one to three weeks the guinea pigs treated with tuberculin in large doses. Three guinea pigs are inoculated subcutaneously and at the end of seven days one pig is given one-half of a cubic centimeter of tuberculin subcutaneously. At the end of twenty-four hours, or at the time of a presumptive tuberculin reaction, the animal is killed and autopsied and cover glass preparations from the fluid at the point of the initial inoculation made and stained in the usual fashion for tubercle bacilli which may some-

times be found. If this pig is negative the second pig is treated similarly at the end of fourteen days when in most cases the bacilli may be found with ease in the smears made at autopsy the following day. In case results from the second pig are negative the third pig is allowed to go full four weeks when tuberculin is administered to him. By this time caseation has taken place, in most cases much sooner, in the presence of which tuberculin will kill the pig at the end of twenty-four hours. In this pig it is a simple matter to recover Koch's bacillus.

Too much emphasis cannot be laid upon the conduct of the treatment of incipient pulmonary tuberculosis. It must be admitted that in many instances the disease is overcome by the patient's natural resources without medical assistance. This constitutes no argument, however, for neglecting to use every means which may prevent such patients from developing extension of the lesion and passing into the second and later stages. The ultimate object of treatment is, as has been long since recognized, the establishing of a normal state of nutrition and increased resistance to the growth of the tubercle bacillus upon the part of the patient. The most important factors tending toward a realization of this object are rest in bed until the fever is controlled and forced feeding. The therapeutic use of tuberculin is secondary to these two, although by no means to be disregarded. The danger of its use in ambulatory patients is that too much reliance is apt to be placed upon it to the detriment of sufficient care, particularly in the matter of rest, and also that reactions cannot so well be avoided or controlled with the patient on his feet. So much has already been written upon the use of tuberculin that it is unnecessary to go into the details of its administration in this paper, but it is rather desired to emphasize the rigid control of the patient's activities. It is nearly impossible outside of a sanatorium to obtain the necessary physical and mental rest; it is utterly impossible to do so if the patient is allowed to attend to his business affairs or be bothered with household responsibilities. In other words, the ideal environment for the care of any patient, whether with advanced or incipient tuberculosis, can only be found in a properly constituted sanatorium for the following reasons: The patient is cut off from the possibility of distractions arising from his business or domestic affairs; also, it is very easy to enforce the necessary rest which so often entails lying in bed for weeks or months at a time; also it becomes a simple matter to administer to his dietary requirements; also tuberculin may be used for building up his resistance under the best possible circumstances, and last but not least, the patient is taught, not only by the efforts of the physician himself, but very largely by the example of other patients in a similar state to his, those rules of conduct and living which are so essential for his progress after he leaves the hospital. There are of course patients with early tuberculosis who may recover by means of treatment administered in their homes or other places, but, nevertheless, that treatment must always aim

to reach the standards set by the sanatorium, and however that patient may desire to co-operate and with whatever means of wealth or climate the patient may have at his disposal, the physician treating a case of pulmonary tuberculosis outside of a hospital is working at a disadvantage, and the patient is not getting what is best for him. This is an important general rule with very few exceptions to it. Regarding climatic conditions, while it is claimed by some authorities that the advantages of climate have been unduly exaggerated, the writer is convinced that it is a subject which should not be disregarded, and that most patients will do better in an equable, sunny climate, to say the least, than where winds and fogs prevail, and has as a rule seen better results where the patient has been sent to the lower altitudes in the mountains than where they have remained near the seacoast.

WHY ARE BETTER RESULTS NOT BEING OBTAINED IN THE PREVENTION AND TREATMENT OF TUBERCULOSIS?*

By FRANCIS M. POTTENGER, A.M., M.D.,
LL.D., Monrovia.

Tuberculosis is a preventable and curable disease. Considerable progress has been made toward both its prevention and its cure during the past quarter of a century, in spite of many obstacles. The fact that we now know more of the nature of the disease and the method of its spreading will enable us to institute other measures which will materially reduce the morbidity. In spite of the fact that the opinion of the profession is very much divided as to the value of different remedies in the treatment of the disease, we are still able by proper utilization of the methods at hand to produce an arrestment or healing in a very large percentage of cases, provided the diagnosis is made early and proper treatment is instituted at once.

The newer theories regarding early infections and their relationship to later infections pave the way for a greater reduction of both morbidity and mortality in the future. Now that we know tuberculosis to be a disease which starts in childhood, from 70 to 90 per cent. of the children being infected before they reach the fifteenth year, our problem is very different from what it formerly was when we considered infection as occurring almost wholly in adult life. We now consider that the burden of the prevention of infection rests largely upon those who have the handling of children during their early years; and, now that we know that clinical tuberculosis as it manifests itself in later life, is probably largely an extension from these early primary foci of infection which were established in childhood, we can see that the prevention of clinical tuberculosis is a question of preventing or healing early infections. The problem of the prevention of clinical tuberculosis then consists, first, in prop-

erly instructing and treating the advanced open cases so that they do not become a source of infection to others, particularly children; second, in keeping children from coming in intimate contact with those who have open tuberculosis; third, in determining during the period of childhood whether individual children are infected and if so to be sure that the disease heals before it extends and produces what we understand as clinical tuberculosis.

At first tuberculosis in children consists of a small focus usually found somewhere in the glands; the bronchial and peribronchial being involved most often and the cervical and others less frequently. From these foci sooner or later the disease spreads in quite a large proportion of individuals to other parts of the body. If the disease can be recognized in this early stage before it does extend to other structures the chances of cure are very much better than they are after it has become a more advanced process.

Even what we have considered early tuberculosis in the past would now, in the light of greater knowledge, be considered late tuberculosis. It is as a rule either an extension to new tissues or a renewed activity in an old focus. Children respond readily to treatment. Their resisting power, as a rule, is good and if they are treated during the period of childhood, the results of treatment would be better, and advanced tuberculosis, as we know it, would become much less common. Even clinical tuberculosis as we know it, that is, as an infection which has extended to the lung and which is producing symptoms of activity, will yield to treatment in a very large per cent. of cases. Such infections, provided the patient is put under proper regime early, and continued under such a regime long enough, will become quiescent and the patient will lose all clinical symptoms in a percentage ranging from sixty to seventy or even ninety; but, after the disease has passed on and become moderately advanced, the chances of procuring an arrestment have already decreased to from fifty to seventy per cent. and when it has passed on to the far advanced stage (leaving out those who are utterly hopeless) the chances are reduced again to from ten to forty per cent. This being true, why is tuberculosis not treated during the favorable stage?

In answer to the above question many conditions must be taken into consideration. All blame cannot be laid upon the physician. The patient must share a very large part of it. Unfortunately, the general knowledge of tuberculosis still fails to bring a conviction that this disease is curable. There is considerable doubt in the minds of laymen and even physicians, as to the curability of this disease. This should not be. There is every evidence to point to the fact that tuberculosis will heal in a very large percentage of cases if treated properly and treated early. One reason why there is so much doubt is the fact that those men who are dealing most earnestly with the problem of tuberculosis and spending most of their energy in its treatment are dealing almost

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entirely with the far advanced cases: A physician sends a far advanced case to a specialist for treatment. The best that can be done in a very large percentage of such cases is an improvement; and this often only temporary. More often the patient goes on down to death. What is the result? Not only the physician but the patient's friends cannot fail to see that an unfortunate result was obtained; consequently they are convinced that there is no cure for tuberculosis. If those who are treating tuberculosis would take the same stand that surgeons have taken in regard to cancer and be unwilling to undertake the treatment of the patient after he has reached the so-called "hopeless stage," we might make greater headway toward the curability of this disease; but those who have had the greatest experience would not countenance such an attitude toward tuberculosis because in many of these advanced cases there is an opportunity to prolong life even for years and to bring the patient to a state of comparative usefulness. If there could be some way to spread broadcast the knowledge that early tuberculosis is curable and that it is only late tuberculosis that is incurable, we would make far more headway in its cure.

In order to treat tuberculosis successfully, it is essential that both physicians and laymen learn to recognize early symptoms. Physicians should always have these early symptoms in their minds and when patients suffering from them present themselves for examination this common disease should be ruled out before a diagnosis is made. The disease comes on insidiously, producing such slight constitutional disturbances that the patient's attention is hardly directed to the real cause of trouble until the disease is well advanced. The symptoms accompanying early tuberculosis may point to any of the important systems of the body, the circulatory, digestive, nervous or respiratory. The patient's attention may be called to a tickling in the throat, a hoarseness, a stomach disturbance, rapidity of the heart's action, or general nervous instability; and under such circumstances other organs are suspected instead of the lung where the seat of infection lies. As a result of this the patient does not consult the physician as early as he should. Where the physician is consulted early, however, and where the diagnosis is made, it requires an extreme amount of argument at times to produce sufficient impression upon the patient to make him realize that he can be suffering from so serious a disease with symptoms which are so slight; and it is not an uncommon thing for him to consult other physicians and secure from them a negative diagnosis. There is still, however, a very important cause of our failures in tuberculosis which can be corrected by physicians alone, that is a failure to make an early diagnosis when the patient presents for examination. This failure was excusable years ago, and may be partly excusable to-day, but in the near future every young man should have such a training in the diagnosis of this disease that he cannot be excused for a failure to recognize it.

The physician must bear in mind that tubercu-

losis is the most common of all serious diseases; that it destroys from one-seventh to one-tenth of our people; that it produces clinical symptoms probably in 20 to 25 per cent. of the adult population, consequently he should always be on the lookout for it.

A common but inexcusable source of failure in diagnosis is the lack of time employed in making examinations. A most careful clinical history should be taken and a thorough physical examination made in every case where the common symptoms of tuberculosis present themselves.

One word regarding the results of physical examination. The man who is not constantly making physical examinations of the chest should not put too much reliance on his findings in suspected tuberculosis. While an expert can make a diagnosis upon these slight changes, those who are less experienced are apt to overlook them and thus fail to confirm what seemed positive evidence from the clinical history. The temperature curve is extremely important in these cases. A two-hourly chart should be taken for a number of days where there is doubt. Considerable reliance can also be placed on the tuberculin test. If 100 per cent. tuberculin is used in making the skin test and the patient should react, reaching the maximum reaction within the first twenty-four or thirty-six hours, it should make us think that activity is probably present, especially if borne out by other data.

I desire to insist most strongly upon proper sputum examinations being made. In this, the physician is too often misled by the patient. The patient will say that he has no sputum but if he is given a proper receptacle and told to bring all the sputum he raises in twenty-four or forty-eight hours, even in these early cases quite an amount of mucus will often be obtainable. If treated by some of the methods of digestion and shaking, this will often show bacilli where they were not expected. The importance of taking a twenty-four hour sample of sputum or a two or three days' sample and homogenizing it lies in this fact. In these early cases the patient may be expectorating bacilli only once in twenty-four hours, yet he may be expectorating ten times; consequently, if one expectoration were taken for the examination the chances of failure would be ten to one, while if the total quantity is collected, homogenized and examined, the percentage of error will be greatly reduced. I do not want to be quoted as considering bacillus bearing sputum as commonly present in early tuberculosis, but only as saying that examination of sputum should show bacilli earlier than the diagnosis is being made today.

The X-ray is important where it can be used by experts and be interpreted in conjunction with the clinical findings. It has little value if the examination is not made by one who is expert in chest pictures.

If any physician will pay careful attention to the clinical history, make a painstaking physical examination, give a tuberculin test and carefully examine the sputum whenever mucus is raised, I

am sure that very few tuberculous patients would pass through our offices without a diagnosis being made.

When the diagnosis is made a great percentage of patients are not treated early. They are allowed to drift. They are not taught that time is a great factor. A diagnosis of early tuberculosis is often made and the patient allowed to believe that he can do something in a month or in two months or six months. He should be impressed with the fact that in many instances a matter of two or three months means a difference between cure and death. The diagnosis should be made as early as possible and intelligent treatment should be instituted at the first moment possible after the diagnosis is made.

A great deal of harm has been done by the wrong conception of the treatment of this disease. Tuberculosis is not an easy disease to treat. There has been a revulsion against the old idea of the climatic treatment of tuberculosis during recent years. This became necessary when we learned that the most important factor in the treatment of tuberculosis was an intelligent physician who understands tuberculosis and the tuberculous patient. To be sure, when proper climate can be added, it has value, but the main factor in the handling of tuberculosis is the physician who handles it. These patients are difficult to handle. While they are anxious to live there are few of them who are willing, without continual urging, to co-operate in the cure day after day, week after week, month after month and year after year. It is also extremely difficult for the physician. It requires a physician of a peculiar type of mind to be able to hold his interest and work with the same patient during all these weeks and months and years; but, success can only be had as the result of such a co-operation between patient and physician. The man who treats tuberculosis must be optimistic. He must be able to impart his optimism to his patient; he must be able to keep him constantly encouraged, helping him over the many trials and discouragements which come during his prolonged illness. He must constantly hold up before him the fact of the curability of tuberculosis and rid his mind of the fear and pessimism which is so common regarding it. While he should not tell any individual patient that he can cure him, or that he will get well, yet he should instill into him with all the force at his command that tuberculosis is a disease which is curable, in which a healing can take place, and that, by proper co-operation, he may be able to obtain this desired end.

Another way in which the general lack of appreciation of the true situation as regards the treatment of tuberculosis manifests itself is in the general attitude of physicians toward institutional treatment. It is a common thing for physicians to tell patients that they are not sick enough to go to a sanatorium. Such a statement shows a woeful lack of knowledge of the aims of such institutions. They are for the cure of tuberculosis, not for the care of the hopeless. There is never a time after the diagnosis has been

made when the patient is not sufficiently ill to go to a sanatorium. The sooner he is placed under ideal conditions the better the result.

I frequently have patients come to me with advanced tuberculosis and severe cavity formation who have been told that they are not yet sick enough to go to an institution and they have been warned by their physician that they must keep away from patients who have tuberculosis lest they become infected. Such an attitude makes the profession ridiculous when the true situation is learned and reacts upon the one who said it.

Another serious difficulty to overcome is to give the patient the right point of view as far as the length of treatment is concerned. They are often told that a few weeks will restore them to health. This statement operates in one of two ways, either in discrediting the man who tells them how long a treatment will be necessary, or, the burden is thrown back on the physician who told them that they would be well in a few months, and the patient wonders why he made such a blunder. It is much better to be frank with patients. Tell them that it is going to require time, that the disease is serious, but the quicker they place themselves under treatment and the more earnestly they co-operate the surer the result, and the shorter the time of treatment.

Another factor which is exerting a mighty force against the curability of tuberculosis is the belief which is so widespread that cure depends alone upon fresh air, good food and rest. A patient may take all of these and still die, even though he took them when the disease was curable. While these are very important factors in the cure, they are not cures for any disease. If they are the only cures for tuberculosis why should a man seek scientific advice and guidance? These are not cures; but these measures, when properly used in conjunction with all other methods by intelligent physicians who understand tuberculosis and the tuberculous patient, will bring about a healing in a very large percentage of cases. If I were a layman and were suffering from tuberculosis and would read the opinions which are so common in medical literature that fresh air, good food and rest are the only cures for tuberculosis, I am quite sure that I would not be led to consult a physician and I am equally sure that I would most probably die of the disease. If I were a layman and were told, on the other hand, that the medical profession today had arrived at such a stage in the treatment of tuberculosis that it could apply fresh air, good food and rest so efficiently and combine them with other measures so successfully in combating this disease, that it could bring about a healing in a very large percentage of cases, then I would surely consult a physician and most probably save my life.

Satisfactory progress in the prevention and cure of this disease then, will only come about through the intelligent enlightenment of the people as to the nature of tuberculosis; the time of infection; the course of the process after infection has occurred; the insidious nature of the disease when it manifests itself clinically; the desirability and neces-

sity of seeking intelligent medical advice early; an ability on the part of the physician to make a diagnosis and a willingness on the part of the patient to accept the diagnosis; and the determination of both to bring the disease under intelligent treatment at the earliest time possible after the diagnosis is made.

SOME LABORATORY AIDS IN THE DIAGNOSIS OF TUBERCULOSIS.*

By GEORGE H. EVANS, M. D., San Francisco.

Notwithstanding the rapid development of knowledge concerning the recognition of early tuberculosis during the last few years, there has not been a sufficiently large relative decrease in its mortality to justify the assumption that the profession generally and the tuberculous public are practically applying this knowledge to a sufficient degree. The principal reasons for this are first the mental attitude of the patient, and second, the failure of the average practitioner to properly appreciate the importance or the possibility of recognizing the disease until physical signs and symptoms reveal gross pathologic lesions of advanced disease.

The Mental Attitude of the Patient: It has long been known to those interested in the study of this subject that the psychological attitude of the average tuberculous sufferer affords a valuable clue in diagnosis. It is seldom that one gets for instance a clear history of cough over a period of time until careful questioning reveals the fact. This cough is frequently attributed to a clearing out of the throat, or if too pronounced to be entirely ignored, some inoffensive and perfectly normal organ such as the stomach or liver is called upon to assume the etiologic responsibility. The loss of weight is explained away in various ways, if not absolutely denied. The suspected patient proudly acclaims the absence of any tuberculous history in the family even though parents may have died as the result of long years of suffering from asthma, bronchitis and other affections and frequently with which "old age" has carried off the parents and other relatives, sometimes not long after the prime of life only emphasizes the dread on the part of these patients of the existence of this disease, which dread, I am sorry to say, the misdirection of some of our educational methods has served to intensify. While this mental attitude should be given its full value as presumptive evidence in making a diagnosis, it is a deplorable fact that it also prevents a great many from seeking competent medical advice at a time when recognition may mean cure.

The Failure of the Physician to Recognize Early Tuberculosis: The responsibility for the failure to recognize the disease in its early stages can not be entirely laid at the door of the patient. In spite of all that has been said and written upon this subject the average practitioner has not yet been thoroughly aroused to the responsibility which

properly rests upon him. The significance of persistent coughs, frequently recurring colds, loss in weight, slight fever, digestive disturbances, and other conditions which go to make up a suspicious symptomatology, are altogether too frequently lost sight of, and daily from consulting rooms issue diagnoses of bronchitis, malaria, anemia, indigestion, etc., when a painstaking physical examination and an intelligent correlation of the physical signs thus found with the symptomatology would reveal the true condition at a stage when intelligent treatment would mean reasonable prospect of a symptomatic cure. If one compares the results of treatment, both home and sanatorium, of the cases recognized early with those which do not come under treatment until destructive lesions have supervened, then the responsibility on the profession generally is nothing short of appalling.

There is another side to this picture, however, which to me has recently been very interesting, and to which I wish briefly to call your attention. It would be unreasonable to suppose that the effort on the part of the tuberculosis expert to emphasize the importance of early diagnosis has entirely fallen on barren places. This indeed is not the case. There has been much fruit from these labors, but a new danger has arisen. As misdirected efforts at the education of the public have resulted in a peculiar form of hysteria, aptly called phthisiophobia, and often fraught with cruel injustice to the tuberculosis sufferer, so have the pronouncements of the tuberculosis expert in emphasizing the necessity of early diagnosis, resulted in a mental attitude in many quarters which has placed the stigma of tuberculosis upon many whose condition did not warrant such diagnosis. This error can not be exclusively laid at the door of the general practitioner, and it is rather refreshing to be able to justly place upon the tuberculosis specialist some of the odium of faulty diagnosis that, judging from so much that has been written, has heretofore belonged exclusively to the general practitioner. The more or less routine use of the Wassermann test, the constant application of Roentgenology in diagnosis, the recognition of the fact that sputa contain other pathogenic material than tubercle bacilli, have brought to light the fact that various non-tuberculous lung conditions are frequent. I have called attention to this fact in a previous communication.¹ It is my conviction that large numbers of such cases are being wrongly diagnosed as tuberculosis daily, and that this mistake is not only mutilating the mortality records but that when they are more generally recognized, the statistics emanating from a great many of our sanatoriums will have to undergo considerable revision. I believe therefore that the necessity for more exact methods in diagnosis should be urged generally upon the profession and that more intelligent interpretation of the findings should be insisted upon.

The initial stage of tuberculosis when the disease is entirely confined to the lymphatics does not admit of definite recognition. Its existence can then only be presumed. There is a large and thoughtful portion of the profession who demand

* Read before the Annual Meeting of the California Association for the Study and Prevention of Tuberculosis, held jointly with the Forty-fourth Annual Meeting of the Medical Society of the State of California, Santa Barbara, April, 1914.

the presence of bacilli in the sputum as evidence of the disease. From the standpoint of public health this attitude is not open to criticism, for it is only in bacilli positive cases that danger from infection exists. The principal object of this paper is to urge better methods of laboratory technic in examination of sputum. A long observation has convinced me that bacilli are overlooked in great numbers of negative reports due entirely to faulty methods of technic, and the first thing I wish to impress is the fact that one should not expect to find bacilli by the usual smear method of examination in vogue in nearly all our large laboratories unless they happen to be present in very large numbers. This fact has long been recognized by many, and various procedures have been brought forward whereby the bacillary content of sputum can be more readily determined. The more important of these are (1) incubation and digestion of the sputum, (2) treating it with antiformin and (3) the method devised by Ellermann and Erlandsen of Denmark. The technic of these methods is briefly described as follows:

The first consists of placing the sputum in the incubator for from 24 to 48 hours, thus dissolving the viscid mucus and pus. Sputum thus treated becomes of a watery consistency, the bacillary content sinking to the lower layer of the fluid.

The antiformin method was introduced by Uhlenhuth in 1908. The action of the antiformin which is a mixture of sodium hydroxide and sodium hypochlorite, depends on its oxidizing properties which are so powerful that all organic matter which is treated with it except hair, wax, fat, and cellulose is brought into solution. Thus all ordinary bacteria are rapidly destroyed, the tubercle bacillus protected by its fatty envelope withstanding the activity of the oxidizing agent. Several modifications of the method have appeared, the one in use in my laboratory being the following: A mixture consisting of from 5 to 20 cc. of sputum and an equal quantity of 50% solution of antiformin is boiled. To 10 cc. of this mixture after cooling is added 1.5 cc. of a mixture consisting of 10 volumes of chloroform and 90 volumes of alcohol to hasten sedimentation. This is shaken and centrifuged. Smears are made with this sediment, stained and examined in the usual way.

About the same time Ellerman and Erlandsen brought forth their method whereby the sputum was mixed and well shaken with one-half its volume of 0.6% sodium carbonate solution and placed in the incubator for 24 hours. It was then decanted, centrifuged, and again decanted. To the residue 2 to 4 parts of 0.25% caustic soda is added. This is heated to the boiling point, centrifuged, and the sediment examined in the usual manner.

More than two years ago in order to determine the relative value of these methods, my bacteriologist, Miss Schwarz, submitted 100 specimens of sputum as they were sent to the laboratory to the above-mentioned procedures. They were all from cases of suspected tuberculosis and in each case the sputum was gathered for 24 hours. The

results are best observed in the accompanying chart:

Number	Ordinary Smear	Incubation	Antiformin	Ellermann Erlandsen
46%	—	—	—	—
23%	—	—	—	+
8%	—	—	+	+
8%	—	+	+	+
15%	+	+	+	+

In fifteen cases bacilli were present by all methods. Forty-six of them showed no bacilli throughout. Eight revealed bacilli only with the antiformin and Ellermann and Erlandsen technics. Eight were positive with all methods except in the ordinary fresh smear. Twenty-three revealed bacilli only with the Ellermann and Erlandsen technic. The chart is incomplete in that it does not indicate the comparative number of bacilli found by the various methods. The Gaffky scale of counting is used in my laboratory. In positive cases where on the fresh smear only a long search revealed a sufficient number to record as Gaffky I, the Ellermann and Erlandsen technic would show a bacillary content ranging all the way from Gaffky VI to X. Since these experiments, in all specimens brought to my laboratory where the fresh smear does not reveal bacilli, the Ellermann and Erlandsen technic has been exclusively used. While it has the disadvantage of being time-consuming, its superiority over all other proceedings has been demonstrated to my entire satisfaction.

In 1907 Much of Hamburg showed that there are tubercle bacilli, which, while retaining their virulence, have lost their acid-fast properties. These bacilli stain by Gram's method, though not by Ziehl-Neelsen. They appear in two forms, a granular rod-shaped organism, and a form showing nothing but granules. They have been found not only in sputum but also in glands and tuberculous abscesses. Numerous stains have been used, all modifications of the usual Gram stain, those most in use being the Gram-Much II, Gram-Much III, and more recently the Much-Weiss staining method.² The significance of Much's granules has given rise to considerable discussion. That tubercle bacilli can under certain conditions lose their acid-fast property is pretty generally known. Bottero³ showed that living tubercle bacilli introduced into liver parenchyma lose their acid-fast quality, become degenerated and stain only by Much's method. Conversely, the attempt to reproduce acid-fast organisms by injecting Much's bodies into guinea pigs has not been conclusively demonstrated, though it has been claimed. If the acid-fast property of the tubercle bacillus is dependent on the fatty substances of which its envelope is composed, and this has been pretty satisfactorily demonstrated by Matson's experiments,⁴ then the loss of the Ziehl-stainable substance must be assumed to be due to some fat-splitting ferment. Much's granules then, being probably degeneration forms of tubercle bacilli, are not present in early cases of tuberculosis. We have only found them where acid-fast bacilli were abundantly present.

Albumin in Sputum: The significance of albumin in the sputum as suggestive of active pulmonary disease has engaged the attention of investigators since 1909 when Roger and Levy-Valensi⁶ called attention to its presence in pulmonary tuberculosis, pneumonia, passive congestion, and edema of the lung, but not in the bronchitides. Numerous observers have since reported their work on this subject, among them Lawrason Brown in this country⁶ and Ridge and Treadgold in England.⁷ The test is made as follows: Ten cc. of the purulent portion of fresh sputum are mixed with four volumes of normal saline solution and thoroughly shaken until homogeneous. This usually takes one or two minutes. From 3 to 10 drops of a 3% acetic acid solution are then added until the mixture is just acid to litmus paper. It is then filtered through moist filter paper and the filtrate examined for albumin by boiling.

While the conclusions of these different observers vary somewhat as to the value of the test, there seems to be general agreement that the reaction is present in nearly all cases of active pulmonary tuberculosis. It has been a routine procedure in my laboratory during the last three years. It has been present in 80% of cases where tubercle bacilli were present in the sputum. This proportion is considerably less than that found by other investigators. In the 20% of negative cases it is to be remarked that they were all late and rapidly progressive cases. I have often seen no albumin reaction in such cases. Attention has been directed to the quantity of albumin. In the majority of the positive cases in this class the reaction consisted in a heavy cloud of albumin in contradistinction to the slight turbidity of those among the non-tuberculous which reacted. Fifty per cent of the closed cases of tuberculosis reacted. The large number of negative cases here is probably explained by the fact that the sputum is not usually abundant, and its content of alveolar cells is much less than in most of the open cases. Ridge and Treadgold emphasize the fact that the alveolar cells are usually present in direct proportion to the intensity of the reaction and regard it as evidence of alveolitis. This fact probably explains its presence in such non-tuberculous conditions as pneumonia, bronchiectasis, and pulmonary edema, where some destruction of lung parenchyma may reasonably be expected to be present. It was present in 50% of my non-tuberculous cases. Such a large number of reactions in this class would seem to invalidate the test until it is interpreted carefully in the light of what has been stated above. Some of these cases were bronchiectasis, some were chronic pneumococcal and influenza infections. With careful interpretation in conjunction with other tests, the albumin reaction must be considered a distinct addition to the diagnostic methods at our command.

Cellular Content of Sputum: In 1908 Wolff-Eisner⁸ drew the attention of the profession to the marked lymphocytic content of the sputum and its significance in the early diagnosis of tuberculosis. It is surprising that this fact has been so little

utilized generally, judging from the sparse mention of it in the recent literature. This is all the more surprising because lymphocytes occur in very large numbers, not only in early but also in advanced tuberculosis. After several years of observation the writer is convinced that a high lymphocytic content of sputum is in itself strong presumptive evidence of tuberculosis, while conversely a high polynuclear content speaks against it, except in cases of mixed infection, where of course, such cases being usually advanced ones, tubercle bacilli are as a rule present in large numbers.

The identity of the cellular content of the sputum has been brought into question by Riviere⁹ who suggests that these cells are alveolar in origin. By approved staining methods I believe one will not usually have difficulty in distinguishing them. Confusion arises if one attempts to differentiate on the smear previously stained for tubercle bacilli. Separate smears should be made for this purpose and stained in the same manner as a blood smear. By this method lymphocytes can usually easily be distinguished from the lighter staining epithelial cells.

The pathologic significance of lymphocytes in the sputum is difficult to explain, but has probably to do with the relationship of the toxins of the tubercle bacillus to the emigration of lymphocytes. This phenomenon we know is not peculiar to tuberculosis, but holds in other chronic infections. It is seen in the spinal fluid in syphilis of the nervous system, and Senator¹⁰ found them in the sediment in chronic nephritis. We are all familiar with the rich lymphocytic content of pleural effusions in tuberculosis of the pleura, and have long looked upon it as of great diagnostic importance.

Quite recently Wendenburg¹¹ discussed the presence of eosinophiles in the sputum of suspected cases of tuberculosis and their significance in diagnosis. While his observations have not extended over a sufficient amount of material to be of great value, they are exceedingly interesting in that the possibility of a peculiar phagocytic function of the eosinophile for the tubercle bacillus is advanced. Wendenburg found the largest number of eosinophiles in the sputum of those cases where tubercle bacilli were present to the exclusion of other bacteria and were found only in small numbers, where the amount of sputum was small, where the physical findings were apical and running a chronic course. He concludes that a local eosinophilia may be produced by a chronic inflammatory irritation which produces a proliferation, transformation and expulsion of the capillary endothelial cells, and the endothelial cells of the small vessels of the surrounding tissue. Such an inflammatory irritation is observed in early tuberculosis in the endarteritis of the smallest lung arteries which run in the immediate neighborhood of tubercles without being in actual contact with them. This probably explains the occurrence in early cases of tuberculosis of small amounts of purulent bronchiolitic sputum without infection inciters. It is in such sputa that Wen-

denburg has found eosinophiles, often in large numbers.

Serological tests as aids to the diagnosis of tuberculosis have not as yet proven of any practical value for the recognition of active disease. The fact that the majority of adults probably have latent lesions has decidedly limited the value of the procedures, as is the case with the various tuberculin tests. Today the profession is eagerly looking forward to the time when some means will be discovered by which tuberculous activity can be recognized with certainty at a sufficiently early stage.

Jessen¹² of Davos has recently applied Abderhalden's sero-diagnostic procedure for the detection of specific proteolytic ferments in the serum of tuberculous patients, using a bacillary antigen, extracted with ether, chloroform, and benzol. As a result of his investigations with a large clinical material he concluded that a positive reaction means the presence of tuberculous intoxication, and, more significant, that the reaction disappears if clinical healing occurs, or, if in spite of local findings, no intoxication exists. The accuracy of these findings, however, are seriously brought into question by a later communication¹³ in which he states that many people with inactive tuberculosis show a decidedly positive reaction.

A more painstaking and intelligent technic in laboratory diagnostic methods should be insisted upon by clinicians generally. A negative report for tubercle bacilli based on an ordinary smear examination should be relegated to mediocrity where it properly belongs. The responsibility for the quality of the laboratory work and the reliability of the report is distinctly up to the clinician. The cellular content of the sputum should be carefully investigated and the various findings carefully studied and correlated with the symptomatology and physical findings if we are to hope for an improvement in our methods of recognizing early tuberculosis.

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THE PROGNOSIS OF PULMONARY TUBERCULOSIS.*

By W. R. P. CLARK, M. D., Clinical Instructor in Medicine, Leland Stanford Jr. University, San Francisco.

To prognosticate the duration, course, and termination of any disease is necessarily a hazardous undertaking and pulmonary tuberculosis is no exception to the rule. There are many conditions, however, to guide us in reaching our conclusions. While it is well to look upon all patients in a favorable light, when we come face to face with grim facts day after day it sometimes robs us of our optimism. From the prognostic point of view it might be well to dwell for a moment on the class of individuals this disease selects as its victims. They are usually the unfortunates whose vitality has been lowered by inherited tendencies, by indiscretions on their own part or by the misfortune of not being able to get proper food and hygienic surroundings and the outcome depends to a large extent upon what we may be able to do to remedy the deficiency in each particular case. Unfortunately, in dispensary work, and with a great many cases in private practice the provision of proper means for care is not at present at hand.

When we have taken the history of the patient, made our physical and other examinations and finally reached a diagnosis (if there is a question as to diagnosis the prognosis is much better), now, on what are we to base our predictions?

The family history will possibly give us some light. If, for example, the patient's mother, sister and brother died of pulmonary tuberculosis and the father died young of some other disease, we know that the inherited resistance to any disease and particularly pulmonary tuberculosis is poor; on the other hand, if the father, mother, sisters and brothers are living and well we may assume that his inherited resistance is good. Between these two extremes there is a wide range of possibilities.

Next, the individual himself, his previous history and habits. The prognosis in a patient who has had numerous severe illnesses is probably worse since he is evidently more susceptible than one with a clear previous history. Lues is a notorious predisposing cause and should likewise be taken into consideration in the prognosis. Alcoholism is probably more often present in the previous history than lues and prepares a very fertile soil for the disease and proportionately lowers the resistance to it. We have all seen patients doing well, all symptoms improving, go on a spree and immediately thereafter rapidly decline.

Another characteristic to be given a good deal of weight is the temperament of the individual. To illustrate this I will cite two cases coming under observation, each in an advanced stage, marked involvement of both lungs, very rapid pulse, about the same temperatures and as nearly alike as two cases could be. "A" worked at his trade horseshoeing until the day of examination. He

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was told he had pulmonary tuberculosis, went home and to bed and died within two weeks. "B" on account of his feeble condition was cautioned not to exert himself on the way home for fear of a collapse and to go immediately to bed upon arrival there. "B" lived exactly four years and supported himself and family about two years and one-half of the time working at his trade as a shirt cutter. It is true the family history was bad in the case of "A" and fairly good in the case of "B" but we were strongly impressed by the marked difference in the mental effect on each patient.

The age of the patient. The death rate is undoubtedly greatest during the middle years of life and the prognosis, all things being equal, is rather more favorable in the very young and in those past middle life. The disease seems to run a slower course after middle life. The diagnosis to me seems somewhat harder to make in children than in adults but I have seen some cases in children with definite diagnoses do remarkably well. One patient, a boy ten years of age with a cavity diagnosed in the right apex by several physicians and confirmed by X-ray, and considered in a very critical condition in April, 1912, had gained sixteen pounds in weight and practically all symptoms except a slight cough with a little expectoration in the morning had disappeared one year later, sputum still positive. In December, 1913, boy looked perfectly well, physical examination showed very slightly impaired resonance at apices, no other signs of disease detected and sputum negative. Had gained four more pounds in weight. This patient had home treatment.

The ages at time of death of 96 patients at the San Francisco Tuberculosis Hospital were as follows:

Under 10 years.....	1
10 to 19 inclusive.....	2
20 to 29 ".....	19
30 to 39 ".....	29
40 to 49 ".....	23
50 to 59 ".....	12
Over 60 years.....	10

The figure under ten years should not be considered for we have very few children to care for.

In the female, as a rule, the advent of pregnancy renders the outcome less favorable. However, in recent years many women have been successfully carried through this condition.

The rapidity of progress of the disease, or the stage of the disease taken in connection with the date of apparent onset. The outlook is rather better with a history of slow progress than with a history of rapid progress.

We now come to the stage of the disease as a factor in prognosis. Using the classification of the National Association the prognosis follows very closely its stages but by no means always; more favorable in incipient, less so in moderately advanced and, as a rule, bad in far advanced, but there are many exceptions to this rule and for prognostic purposes the classification cannot serve definitely. We have all seen some incipient cases run a very rapid and fatal course and some far

advanced cases progress very slowly and even become arrested. One case coming under my observation in early middle life with a history of short duration, the physical examination showing a small lesion at one apex with other organs apparently normal, died from tubercular meningitis within two weeks after first being seen. On the other hand, a number of far advanced cases have lived and been comfortable for from three to six years or longer. These illustrations demonstrate a point to be considered in making rules for the admission of patients into a state sanatorium, i. e., not to be governed in the admission of patients so much by the stage of the disease as by the showing of improvement while under observation in a suitable institution for a stated period.

To illustrate some of the points mentioned above I give below a few statistics gathered from dispensary and city hospital work in San Francisco to show the class of cases handled and to give some idea of the outcome, also some statistics from other sources.

Patients occupying forty beds at the San Francisco Tuberculosis Hospital during the past few years:

Beds full at present with patients in various stages.....	40
Discharged improved.....	23
Discharged unimproved.....	13
Discharged no comment.....	38
Died.....	98
	212

No claim is made for positive cures but several of the above noted as "improved" were arrested cases.

Over forty-six per cent. of the total number died. 47 died within the first month.

34 " between one and six months.
7 " " six and twelve months.
9 " " one and two years.
1 " " two and five years.

98

Quite a large proportion of the 47 died within a few days after being admitted. These figures are from one of five services and I presume the percentages are about the same with the others. At present there are about two hundred beds in the hospital.

But the San Francisco Hospital is not alone in this class of statistics, for in Reprint No. 145, Public Health Reports, Oct. 17th, 1913, Tuberculosis Sanatorium, Fort Stanton, N. M., the following ultimate results of treatment are given:

"Out of 1,924 patients whose treatment terminated more than six months ago, 951 are known to be dead, 687 of these having died at this hospital. The location and condition of 853 could not be ascertained."

An analysis of 414 patients in the Stanford Division of the Tuberculosis Clinic of the San Francisco Association for the Study and Prevention of Tuberculosis:

	Lost Sight of.			
	Incip.	Mod. Adv.	Far Adv.	
Within 1 year.....	56	76	51	
Bet. 1 and 2 yrs....	1	3	0	
Bet. 2 and 3 yrs....	1	3	1	
Bet. 3 and 4 yrs....	0	2	0	
Bet. 4 and 5 yrs....	1	0	0	
	59	84	52	Total 195
Under Observation.				
1 year	28	18	14	
2 years	1	2	1	
3 years	0	4	1	
4 years	0	0	1	
5 years	0	2	0	
	29	26	17	Total 72
Undiagnosed, non-tub. or tub. of other organs.....				73
Died				74
				Total 414

Deaths occurred as follows:

	Incip.	Mod. Adv.	Far Adv.	
Within 1 year.....	1	15	43	
Bet. 1 and 2 yrs....	0	1	6	
Bet. 2 and 3 yrs....	0	2	1	
Bet. 3 and 4 yrs....	0	0	3	
Bet. 4 and 5 yrs....	0	1	1	
Bet. 5 and 6 yrs....	0	0	1	
	1	18	55	Total 74

In looking over the cases lost sight of and the cases under observation it will be noticed that a majority were lost sight of within one year and most of those under observation have been so less than one year, showing how transient these patients are.

It will be noticed that the deaths have followed very closely the original diagnosis as to stage.

To show that clinical experience is very much the same in other parts of the country I quote from Report No. 7 of the Henry Phipps Institute, dated April 1, 1913:

The patients under consideration visited the Phipps Institute in the second year of its existence, Feb. 1, 1904, to Feb. 1, 1905. The investigation was completed Sept. 1, 1911.

"Of 915 patients but 274 attended the following year and rapidly diminished each year. Applicants non-tubercular or not destitute 152. Patients known to be living at time of investigation, 184. Patients known to be dead, 380, or 41.5%. Patients untraced, 320, or 34.9%.

Outcome of 184 cases:

	Prog- nosis.	No sympt.	Sympt.	At work.	Not working.
Favorable	121	80	18	82	8
Doubtful	34	19	16	22	5
Unfavorable	5	3	2	3	2
No record	24				
	184	In addition there were 24 who were living but gave no information as to their health or occupation.			

Of 107 now known to be living the sputum was positive in 9, negative in 47, and no examination recorded in 49. There was, however, one or more suggestive symptom.

We have dealt above with the most discouraging type of cases. Let us now consider the class of patients admitted to the New York Sanatoria, the tuberculous poor of New York, for the most part incipient, but a few in other stages who offered some hope of improvement. Nine hundred and seventy-five patients are considered; on admission they were divided as follows: 644 incipient, 252 moderately advanced and 79 advanced; of these 20.1% were discharged cured, 25.4 arrested, 33.6 improved and 20.8 unimproved. Five hundred and fifty of these cases were able to be traced and out of 358 admitted as incipient 12% died

within a year of discharge; out of 144 moderately advanced cases 23% died within a year of discharge and out of 48 advanced cases 25% died within a year of discharge. For a further study of these cases you are referred to a most carefully prepared article by Dr. Chas. F. Bolduan in an investigation carried on by The Council of Jewish Women, Monograph Series, No. 8, October, 1913, Department of Health of the City of New York. So it will be seen that the outlook is brightening with the selection of cases and with better means for care.

U. S. Army General Hospital, Fort Bayard, N. M., 1911. Result of treatment in completed cases.

	Ap. C.	Ar.	Imp.	Unimp.	Died.
Incipient	16	18.76%	12.5%	56.25%	6.25%
Mod. Adv....	196	4.59	7.4	70.40	14.79
Far Adv....	144	0.00	.69	61.11	18.73
					19.44

The Barlow Sanatorium, California, Tenth Annual Report, Sept. 1, 1913. "Requirements for admission. Free from complications. They must be in a condition so that a cure or improvement could be reasonably expected."

Apparently arrested, 19—32.75%. Quiescent, 9—15.51%. Improved, 20—34.48%. Failed, 6—10.34%. Died, 4—6.89%. A total of 58 cases.

The Pottenger Sanatorium, Monrovia, Cal.:

Number of patients discharged, 800.

Number remaining over three months, 468; covering a period of five years.

	I Stage.	II Stage.	III Stage.
Apparently cured or arrested.	92%	76%	36%
Improved	8%	25%	38%
Unimproved or died		6%	26%

These sanatoria have been selected as types and because we are all more or less familiar with them. With the class of patients in the public hospitals where no selection is made the prognosis as a whole is not very good but as we go up the scale to the private sanatoria where the early diagnosed cases are cared for the percentage of cured and arrested cases improves.

In this paper I have not attempted to compare the results of home treatment with the treatment in sanatoria. Many patients will do better at home than at sanatoria but in all probability sanatorium treatment is preferable for a majority, for a time at least.

Notwithstanding our natural advantages in California we are not giving the tuberculous poor the opportunities they should have. I believe the cities and counties throughout the state are taking excellent care of the advanced cases, at least I know San Francisco is. The San Francisco Tuberculosis Hospital has made rapid strides forward in the past few years under its present management and in the near future it will probably have a new hospital building. The San Francisco Society for the Study and Prevention of Tuberculosis is likewise doing a good work but necessarily its field is restricted. The greatest good for the greatest numbers, however, can not be obtained until the state as a whole helps. There should be an establishment for the hopeless cases and for those under observation; a place for incipient and for the more advanced cases showing an improvement, and a place for discharged patients to earn a living where they may be under proper supervision. The above in addition to the clinics with social workers. It might be argued that each large community might have a complete set of institu-

tions but it seems to me that for economic reasons it would be better for the state to furnish one or two of these institutions, or, possibly combine two in one. Until these units are a reality patients in the present city institutions will continue to run around the circle: In the hospital until their improvement warrants their discharge to make room for more advanced cases, then after working a while at improper work to the clinic in a worse condition, then back to the hospital as bed patients. Too often have we who are doing dispensary work seen the operation of this circle. It makes no difference whether the patient returns again to the San Francisco Hospital or decides to go to the Los Angeles Hospital, the circle is there just the same and the prognosis in this great majority will continue to be bad.

Lastly, the opportunity for proper treatment and care. A majority of the tuberculous in every day life are not able to get this care and are obliged to work to support themselves and those dependent upon them at vocations not suited to their condition until the disease has progressed to such a stage that hope for cure or the arresting of the disease is out of the question. And this opportunity for proper treatment and care is by far the greatest factor in determining our prognosis, for without it hope is practically gone and in proportion to the degree of care and attention the patient is able to receive in that same proportion does the outlook for future improvement brighten.

THE TREATMENT OF PULMONARY HEMORRHAGE.*

By R. S. CUMMINS, M. D., Los Angeles.

My excuse for presenting a paper to this society upon this subject is the great variation and lack of logic of the medicinal treatment as given by the various authors.

In considering the treatment of a hemorrhage there are three essential things from the conditions of which must evolve the theories regarding the treatment. The first is the condition of the ruptured vessel; the second, the condition of the elements of the blood which make up the clot, and the third is the pressure under which the blood is flowing in the vessel.

In pulmonary hemorrhage there are two sets of vessels to consider, the bronchial and the pulmonary. Of these two sets there are three portions, any one of which may be ruptured, viz.: artery, vein or capillary.

Rasmussen,¹ in 1868, studied pathological specimens of the lungs in pulmonary hemorrhage, and came to the conclusion that hemorrhage nearly always took place from the pulmonary arteries. Preceding the hemorrhage small aneurisms were formed, which caused a thinning of the vessel wall. Probably the cases in which the sputum is only slightly streaked come from ruptured capillaries.

In considering the ability of the blood to form

a firm clot, the question immediately arises whether in tuberculosis, complicated by pulmonary hemorrhage, there is any change in the elements of the blood which produce the clot. While we have not tested the blood of tuberculous patients for thrombokinas, antithrombin, prothrombin, etc., yet we believe that for all practical purposes, if the clotting period is not increased, if the bleeding time is not lengthened, and if the blood platelets are not diminished, we may conclude that the blood condition is no causative factor in producing or prolonging the hemorrhage.

In our endeavor to ascertain the state of the blood we studied the blood platelets, clotting period and bleeding time upon fourteen cases of pulmonary tuberculosis, nine of which were studied during an attack of hemoptysis.

The platelets were counted after the technic of Wright and Kinnicutt² with the brilliant-cresyl blue and potassium cyanide stain. The clotting period was done with Duke's³ modification of Milian's method, in which a drop of blood 5 mm. in diameter was observed at 40° centigrade until firmly clotted, and the bleeding time was done with Duke's method. A stab wound sufficient to cause free bleeding was made in the ear and in one-half minute a piece of filter paper was applied, taking up all the blood. This was repeated every half minute until no blood appeared. The following table gives the results in the fourteen patients:

Hemorrhage Patients.				
Blood Platelets, 9 cases.	Highest 1,194,000	Lowest 344,000	Average 548,000	
	Longest Time	Shortest Time	Aver. Time	
Clotting Time, 8 cases.	6 min. 30 sec.	4 min.	5 min. 12 sec.	
Bleeding Time, 6 cases.	3 min. 30 sec.	1 min.	2 min. 10 sec.	
Patients Having Had No Hemorrhages.				
Blood Platelets, 5 cases.	Highest 602,000	Lowest 271,000	Average 448,400	
	Longest Time	Shortest Time	Aver. Time	
Clotting Time, 4 cases.	8 min.	6 min.	6 min. 45 sec.	
Bleeding Time, 3 cases.	4 min.	2 min. 30 sec.	3 min. 10 sec.	

From the foregoing it is noted that, taking 250,000 to 350,000 platelets as the normal, according to Wright's and Kinnicutt's investigation, the average number of platelets was increased in tuberculosis, a greater number being present in hemorrhage cases than in non-hemorrhage cases, the average being 548,000 and 448,400 respectively.

Considering the normal clotting time as being five to eight minutes, my cases all come well within this limit, the average in hemorrhage cases being 5 mins. 12 secs., as against 6 mins. 45 secs. in the non-hemorrhage cases.

Duke found the normal bleeding time with the method used to be one to three minutes. It will be seen that my cases all came practically within these limits, the average in the hemorrhage patients being 2 mins. 10 secs. and in the non-hemorrhage 3 mins. 10 secs.

We would conclude, then, from the few cases observed, that in none of them was the blood con-

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dition, so far as forming a thrombus in the ruptured vessel is concerned, a factor in causing or prolonging the hemorrhage.

Treatment. In considering the treatment we will take it up under three phases, viz.: forming the clot, constricting the end of the broken vessel, and lowering the blood pressure.

Forming the Blood Clot. Wright⁴ showed from his experiments in quite a long series of cases that in normal individuals he could decrease the clotting period of the blood from one-half to one-quarter the normal time by the exhibition of calcium. He also found that a single dose of 60 grs. of either the lactate or the chloride would take effect in 20 minutes, showing its maximum effect in 45 minutes and lasting from four to seventeen days. Hence it would seem that 60 grs. of calcium lactate or chloride, given immediately upon the onset of hemorrhage, would, by increasing the rapidity with which the clot was formed, assist in plugging up the ruptured vessels. This should be repeated in at least four days. Because of the increasing frequency with which horse serum is used in the treatment of diseases, and the lack of sufficient proof that it shortens clotting or bleeding time of the normal blood, we would suggest that it be discontinued in pulmonary hemorrhage unless there is a definite pathological change in the blood.

Ruptured Vessel End. Owing to the diseased condition of the broken vessel as mentioned above, it is probable that it does not respond to the vasoconstrictor drugs as adrenalin and nitroglycerin, but that on the contrary an injury is done by causing a constriction of the pulmonary arterial system, thus raising the pulmonary blood pressure, which is just the thing that should be avoided. Possibly the ice bag causes a constriction of the vessels immediately surrounding the area of hemorrhage, thus lessening the amount of blood coming to that area, and in this way is beneficial. The application should not continue over one hour at a time, or the cutaneous area will become so benumbed that the effect is lost.

Lowering Blood Pressure. This is probably the most important thing to be accomplished, and it appears that most of the routine treatment which produces any benefit causes it in this manner. Wiggers⁵ states that "the object of paramount importance is to promptly reduce the bleeding by such drugs as lower the pressure in the pulmonary circuit."

Rest in bed, without a pillow, and without even raising the hand, is beneficial only as it lowers the blood pressure and lessens pulmonary movement. The blood should be expectorated into a basin or gauze without raising the head.

If the hemorrhage is rather severe, nourishment and liquids should be limited to chips of ice to quench the thirst for the first twenty-four hours, and to about one quart of cold milk during the second twenty-four. In addition to this a sufficient amount of a non-effervescent saline should be administered to produce two soft stools per day, as emphasized by Burns.⁶ This should be administered in a rather concentrated form, in order

to remove as much liquid from the blood as possible, thus perhaps lowering pressure and hastening clotting. The saline also assists in eliminating any of the pressor poisons, if there be such, which otherwise might be absorbed from the intestines.

In order to allay the excessive coughing, an opiate is advisable. Codeine or heroin, administered hypodermically or by mouth, are preferable, as they are less constipating than morphine.

A good rule is to give one-half grain of codeine every hour until the coughing is relieved.

The other drugs used aim directly at lowering of pressure, the principal ones of which have been carefully studied by Wiggers⁷ in his splendid work reported in 1911. In this work digitalis, strophanthin, ergotoxin, pituitary extract, nitroglycerin and chloroform were experimented with.

Wiggers found that digitalis produced an increase of both systemic and pulmonary pressure in dogs, both with and without pulmonary hemorrhage.

The action of strophanthin and ergotoxin was the same as digitalis, with the exception that there was no change in either systemic or pulmonary pressures during hemorrhage; hence, both should be discarded, except in capillary hemorrhage.

Chloroform was found to decrease both systemic and pulmonary pressures, as well as to slow respiration. This corresponds to the observations of Fish⁸ in hemoptysis, and hence would appear to be a beneficial measure. Fish recommends three to four cc. applied to gauze, or a mask, to be inhaled at the beginning of the hemorrhage, and followed by fifteen to twenty drops, every hour, for from two to three days.

The effect of the nitrites was rather peculiar. Wiggers found that they lowered systemic pressure in both normal and bleeding dogs, but that they increased pulmonary pressure except late in hemorrhages. The explanation of this is found in the recent work of Macht,⁹ who showed that strips of pulmonary arteries contracted upon the application of a solution of the nitrites. Macht reasoning from this suggests that they would be beneficial in hemoptysis. His reasoning, however, is faulty in that he evidently did not consider that the broken vessel was diseased, and hence would not respond to a stimulus as would a normal one. On the other hand, because of the effect of the nitrites upon the normal vessels, the pulmonary pressure would be increased, which is the opposite condition to be desired. This would lead one to believe that the wide clinical observation, leading to a belief in the efficacy of the nitrites in pulmonary hemorrhage, is at fault, and that their results are probably injurious instead of beneficial.

Pituitary extract was found to raise systemic pressure and to lower pulmonary pressure, both in the normal and bleeding animals, and hence would seem an ideal drug in this condition. Hypodermic injections of one-half to one cc. ampoules, given twice daily, seems to have borne this theory out in practice.

Atropin has been suggested because of its depressing effect upon the vaso-motor system and the relief it gives to the coughing.

Adrenalin would appear to be injurious, as its constrictive action upon the blood vessels would cause an increase of blood pressure.

Because of its depressing effect upon the heart and blood vessels, aconite has been used in hemoptysis. Three to five drops of the tincture given every three hours would undoubtedly lower pulmonary pressure. The liability of a hemorrhage patient to pneumonia and the frequency of some cardiac disease would certainly limit its usefulness.

I have purposely refrained from discussing artificial pneumothorax in pulmonary hemorrhage, because of the volume of recent literature which so thoroughly and completely treats all phases of this procedure.

From the few foregoing observations we would conclude the following:

(1) Because of the disease of the broken vessel, little good can be expected from the use of vasoconstrictor drugs, but injury may result from their action upon the portion of the vessel which is healthy, by raising the blood pressure throughout.

(2) Calcium, in dram doses, should be administered at once when hemorrhage from the lungs occurs.

(3) Neither digitalis nor strophanthin are indicated, except in capillary hemorrhage.

(4) Theoretically, nitrites, instead of being beneficial in pulmonary hemorrhage, are injurious, unless administered after the loss of a goodly quantity of blood.

(5) Absolute rest, little food or liquids, with thorough evacuation of the bowels by means of saline laxatives, are among the most important features of the treatment.

(6) Pituitary extract comes the nearest, theoretically, to being the ideal drug for this condition.

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1002 Brockman Bldg.

THE BUREAU OF TUBERCULOSIS, ITS WORK AND PLANS.*

By BURT F. HOWARD, M. D., Sacramento.

The object of the Bureau of Tuberculosis as planned by the Tuberculosis Commission of 1911 is familiar to most of you. It was the intention of the commission that this bureau should super-

vise all work within the state bearing upon the preventive, curative and other aspects of the tuberculosis problem. That it should advise or direct all local bodies in making provision for the treatment of tuberculosis in sanatoria, hospitals, dispensaries, farm colonies and other institutions, both public and private; that it should advise with the officers of penal and charitable institutions regarding the care of tuberculous inmates and should make all necessary rules and regulations for the effective carrying out of the work of the bureau.

The law which was passed by the last legislature, as the result of the recommendations of this commission did not assign any such general duties as planned by the Tuberculosis Commission, but specified three groups of duties, 1. "The complete and proper registration of all tuberculous persons within the state." 2. The inspection of institutions treating tuberculosis, both public and private; and 3. Those assigned by the Board of Health, (including the duties of assistant secretary). The latter group was apparently intended to provide for the more aggressive and constructive work outlined by the commission.

For the work of inspection and registration and all other non-specified duties there was an appropriation aside from the salary of the director of \$750 a year. It is evident that this sum, after meeting the expenses of traveling, stenography, printing and postage, leaves little margin for carrying out the details of any elaborate system of tuberculosis registration, or method of discovering unreported cases.

The other recommendations of the Tuberculosis Commission which cannot become effective without large appropriations are, briefly, 1, The establishment of a system of tuberculosis dispensaries available for both the city and rural populations of the state. 2, Provision for advanced cases in special hospitals provided by the counties with state aid, either singly or by districts consisting of two or more contiguous counties; and by agreements between counties and private tuberculosis institutions. The commission also recommended 3, state sanatoria for early cases, and 4, farm colonies for incipient and convalescent cases.

Registration.—It is not necessary to point out at this time the importance of registration of tuberculosis, it is universally admitted among those who have made a study of the question, that no general campaign for the control or the eradication of tuberculosis can be properly planned or conducted without first ascertaining the extent and distribution of the disease. This bureau has made an effort to obtain the registration of tuberculosis, first by bringing the law which requires registration of tuberculosis to the attention of physicians. The first step taken in this line was the sending to 284 health officials a signed letter calling attention to the law. Later a letter was written to the secretary of each of the county societies requesting that the subject of registration of tuberculosis be given special attention in the local society and that the letter be read to each society. This letter was also published in

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the STATE JOURNAL. The subject of registration was presented briefly to the health officers at the Venice meeting in October and also to the San Joaquin County Medical Society at a very well attended meeting on January 20th. Other efforts in this line have been by personal request of the management of various institutions visited, and by a personal canvass of various towns where there was time to spare after visiting the local institutions. The results of this work are shown by an increase in the number of cities and counties reporting tuberculosis, which has been very gratifying. Two thousand five hundred and sixty cases have been reported in the six months beginning with October. If this is equaled in the next six months the total will approximate the number of deaths from all forms of tuberculosis in 1912 which was 5,128. We hope to do better than this, since 100% is a high mortality for tuberculosis, though not an uncommon ratio in the early years of tuberculosis registration, in which the registering of 70% of cases before death is considered good.

One thousand one hundred and forty more cases were reported than in the corresponding period of 1912, which is the only year for which complete returns are available though we expect to have them for 1913.

As a rule the physician is unwilling to report to the local health officer in the same community, although he would be willing to report directly to the state bureau. The plan of reporting directly to the State Board of Health has been found successful in Wisconsin. In Maryland physicians are permitted to send in their reports postage due and each physician was supplied at the outset with a dozen report cards and envelopes. These and many other devices for inducing physicians to report tuberculosis remain to be tried when it becomes evident that present methods are not effective. A new card has been devised to take the place of the "communicable disease blank" which has up to this time been used for making full returns on communicable diseases, including tuberculosis. The reason for making this change is to call special attention to tuberculosis, and to get definite information on certain sociological points which are of more importance in the consideration of tuberculosis than in that of other communicable diseases. It seems probable that whatever form of appeal to physicians may be adopted no plan will be successful in obtaining a complete registration which depends solely upon the voluntary co-operation of the busy general practitioner. It is to the dispensary that we must look for the solution of this portion of our problem as well as for the solution of many other difficult phases of the same.

Hospital Inspection: The department has made inquiry as to what hospitals throughout the state have departments for treating tuberculosis; replies have been received from 161 hospitals and sanatoria of which about 50 receive tuberculous cases. There are a number of others which receive tuberculosis for diagnosis only, and a few county hospitals which have not been heard from.

County hospitals report, as a rule, that they receive all applicants but many of them have no special provision for tuberculosis cases. Of the 58 counties of the state there are 53 county hospitals which have reported the number of beds assigned to tuberculosis, the total number of beds assigned being 809; of these 20 have been inspected with a capacity of 670 beds. There are 16 county hospitals which are reported to have departments for tuberculosis; of these 12 have been visited. These 12 afford three-fourths of the total county hospital accommodation for tuberculosis.

There are 11 state institutions with approximately 140 beds available for tuberculosis cases. This includes institutions which up to this time have had no definite assignment of beds for this purpose. One of the results of inspection has been to stimulate these institutions to make special provision for the isolation and care of tuberculosis where this was lacking.

There are 17 private sanatoria for tuberculosis with a total of 500 beds, and 8 other hospitals, including two federal hospitals, with a total of 151 beds. This makes a total of 1600 beds available in the state for tuberculosis. Of these 1400 have been inspected.

As to the efficiency of this provision it is apparent that it is numerically entirely insufficient. The private sanatoria and other private hospitals are doing good work, each to a large extent covering a field of its own.

There is great variation in the kind of provision made by the counties for the care of tuberculosis. With but few exceptions the county hospital and poor farm are one, and it is considered a disgrace to go to the poor farm, hence the county hospital is as a rule used only as a last resort by the self-respecting members of the community. This is a strong argument for the erection of independent hospitals for the treatment of tuberculosis. Another objection to the prevailing arrangement is that these institutions are run with a few exceptions chiefly with a view to economy of administration rather than to the possibility of cure or comfort to the patient. The exceptions show that it is possible for a county to conduct a hospital for tuberculosis along the lines which are generally recognized as suitable for the conduct of a tuberculosis sanatorium or hospital.

Even though certain hospitals are able to charge a reasonable sum, both in the general and tuberculosis departments, to those who are able to pay, there is not much evidence which would lead one to suppose that it would be an easy matter to so alter public sentiment that county hospitals would ever become a factor in the prevention of tuberculosis by providing hospital care to a large number of semicharitable or pay cases. However, it is possible that if the public were generally awakened to the need, and a large number of fine county hospitals were established apart from the poor farms, that a change of sentiment would take place.

It is gratifying to observe that following the inspections of this bureau certain of the county

hospitals as well as of the state hospitals have instituted measures for the better care of tuberculosis patients. While perhaps all that could have been expected in seven months of this kind of work has been accomplished, it will amount to but little with respect of the prevention of tuberculosis, unless the county can be made to take its place in the plan of a general campaign.

"The Tuberculosis Campaign": To one who follows the trend of events it is apparent that the anti-tuberculosis campaign which had its inception with the discovery of the tubercle bacillus, and accomplished many of its ideals within the past five or ten years, has at last met the foe. Up to this time the civilized world was like a subservient race oppressed by the scourge of tuberculosis. It had never risen and therefore had never been defeated; now the battle is on we may say at least in Scotland, England, Switzerland, Germany, New York, New Jersey, Pennsylvania and other countries or states which have measured their strength against that of the tubercle bacillus by establishing a system of hospitals, sanatoria and dispensaries, with a view to the care and prevention of tuberculosis.

California thus far has conducted a guerilla warfare with a shot here and there, but it has not as yet attempted a campaign like that of New York, with its slogan "no uncared-for tuberculosis in 1915" ("1915" has another meaning for California) California is looking to the East in order to benefit by its experience, and the East is watching California to see what she will do with her tuberculosis problem.

There are at least three things we may learn of the East:

First—It has, to some extent, underestimated the size of its problem in attempting to provide hospital care for advanced cases, chiefly perhaps, as Dr. Homer Folks said in his opening address last year, "by reason of the fact that under suitable conditions of shelter, food, and abstinence, moderate and even advanced patients often live a long time. The full volume of the burden which we may have to carry of unproductive invalids, in order to prevent infection is perhaps not even yet clear, but it is evident that it is very large."

Second—The problem is a sociological as well as a medical one; and an important corollary of this truth is that the tuberculous individual can not be considered apart from his family, "The patient, his family and his environment are one and indivisible."

Third—The medical aspects of the problem are not yet clearly defined. The medical profession is not always united in giving its support to plans proposed to combat tuberculosis nor is it always intelligently interested in tuberculosis work. In evidence of this I need only cite the difficulties which the British Government met in carrying out the provisions of the National Insurance Act of 1911. (A most wonderful piece of legislation, which was enacted, as Lloyd George says, "With the hope of reaching a new stage in the resources of the state for the welfare of the least as well as of the greatest of its members.")

One of the most interesting papers at the Washington meeting of the National Association was to my mind that of Drs. Biggs and Bolduan on the influence of the tuberculosis campaign, on the methods of public health work generally, pointing out as it did the success of carefully organized public health methods developed in anti-tuberculosis work, and now coming to be applied to the administrative control of other preventable diseases.

If this state were willing to establish a complete system of health control along these lines there might not only be a great improvement in general health, but there would be no occasion for a special machine for tuberculosis control.

"The Dispensary:" In California, however, it is probably true as it has been in other states that tuberculosis must first point the way, and for this reason I wish to ask your attention to the dispensary as the first unit of tuberculosis control. This is defined as an institution (or "institute," as it is called in Wales and elsewhere) which has for its primary objects the discovery of cases of tuberculosis, the education of the community, the after-care and employment of patients and assistance to their families by various indirect means including co-operation with local physicians and charitable organizations.

A state dispensary should be called a "station" of the Bureau of Tuberculosis and should scrupulously avoid giving specific treatment until it can be shown that it is absolutely necessary for the success of the system.

We have in California six dispensaries and clinics for the special treatment of tuberculosis, one at each of the following places named in the order of their founding: Los Angeles, San Francisco, San Diego, Oakland, Berkeley, and San Jose. During the greater part of their existence these dispensaries have been supported mainly by private charity and consequently have been obliged to place more emphasis upon those lines of work which are obvious and make the strongest appeal. Thus some are often obliged to pay more attention to treatment and material assistance, namely, "milk and eggs," than to the discovery of cases of tuberculosis, after-care and employment of patients, or to epidemiological or sociological studies which might serve as a basis for future scientific handling of the tuberculosis problem, if conducted on a large scale.

I would suggest therefore that in so far as possible these or similar existing institutions be induced to co-operate with the state in this latter aspect of the work. This could be brought about by some form of subsidy as is already being done in Oakland and Berkeley by the local government.

The Tuberculosis Commission proposed, you may remember, the establishment of 15 dispensaries under full time medical officers, each to cost the state \$10,000 a year. While this plan is admirable, it seems to me that comparable results might be obtained at less expense by co-operation with existing dispensaries and that when these have been brought into harmonious co-operation

with the state the work could be extended gradually both in the city and country districts.

Since the total annual appropriation for all health work in the state, outside of the insane hospitals and Bureau of Nurse Registration, is but \$120,750, we cannot expect those who are not particularly interested in tuberculosis to subscribe to a plan calling at the outset for \$150,000.

If the Bureau of Tuberculosis is to accomplish anything definite, stations must be established throughout the state for this sort of work; and if nothing more is accomplished at this meeting, I wish to ask your approval of a plan to establish one station in Los Angeles and one in Oakland which shall have in view the following objects:

First: To promote complete morbidity returns of tuberculosis in Los Angeles county, and the metropolitan district of Alameda county.

Second: To make a sociological survey of families reporting tuberculosis, with a thorough investigation of home conditions such as the number of adults and children exposed under bad conditions.

Third: To prevent the development of tuberculosis in children by: (a) Improving home conditions (instruction of parents, removal of infected member, reporting housing conditions, referring to clinics, etc.) (b) Improving school conditions (to be preceded by a study of existing conditions including the collection of statistics, as to the effect of open-air schools upon the health of pupils). These stations would of course co-operate with the city health department, the school department, the various local dispensaries and other social agencies.

The estimated cost to the state of one of these stations is \$3,000 a year.

Salary of secretary.....	\$100 per month	\$1200
Salary of visitor or visiting nurse	100 " "	1200
Office expenses and carfare	50 " "	600
		<hr/> \$3000

The legislature appropriated \$5,000 for a commission to "investigate the problem of tuberculosis in California, and to recommend an effective and comprehensive plan for the control and gradual eradication of the disease." It would certainly be logical that it should adopt the plan proposed by that commission so far as possible, unless in the course of time, evidence should arise to show that the plan is not a good one. The first step was the establishment of the State Bureau of Tuberculosis which cannot fully accomplish the purpose which was intended by the commission without the other units of the plan. Of these the first in importance was the dispensary, the second, the county tuberculosis hospital with state subsidy, and the next, district sanatoria and state farm colonies for early and convalescent patients. It is for you, gentlemen, to establish the present status of the plan proposed and to unite in the support of whatever plan may be agreed upon.

AREQUIPA SANATORIUM, A SOCIOLOGICAL AND ECONOMIC EXPERIMENT IN THE CARE OF TUBERCULOUS WAGE EARNING GIRLS.*

By PHILIP KING BROWN, M. D., San Francisco.

Arequipa Sanatorium makes no claim to any distinguishing characteristics save in its efforts to meet a social and economic problem made very plain by the three years' work of the Tuberculosis Class of the San Francisco Polyclinic—the need for a place where young working women could go with their early tuberculosis and be cared for at a rate within their means, with no element of charity and with the added opportunity of earning part or all the cost by some form of work which they could do safely on a commercially successful basis.

It undertook also to secure co-operation in the support of early cases at the sanatorium from employers of female labor and from social and labor organizations.

Finally it has tried to carry on some educational work among the 40,000 working girls in San Francisco, among whom the death rate from tuberculosis is twice as high as among men.

The first part of the problem, providing a place where early cases could be cared for at a modest rate, was made possible by the generous gifts of land and money for building, of services of architect and wise counsel of experienced people, until within a few months \$20,000 had been spent in providing a very complete plant for 24 patients, including water supply and sewage system, a laundry, a stable and equipment, servants' building, work building and a cottage for the visiting physicians and managers. From the first there was a hope that all expenses might be met from the payments of \$1 a day by each patient and it is a satisfaction to say that this rate has thus far—over a period of two and one-half years—covered the expenses of board, nursing, laundry, household and upkeep of grounds and provided repairs and renewals. The only exceptions to the dollar a day rate are patients obliged to be continuously in bed, who are charged \$1.50 a day. Patients' individual laundry is done for them, but they are charged for drugs for other than their tubercular trouble. It is the aim of the sanatorium to take only early cases and to avoid receiving any who would have to remain in bed.

Our class experience has taught us that rarely do third stage cases among the working class become again active factors in the industrial world and that most second stage cases reach only the "apparently cured" state and relapse sooner or later. We do not feel that we ought to take any third stage cases except where cavities have shown signs of organization, and constitutional symptoms have long since ceased. In other words, while admitting that even third stage cases can recover sufficiently to do light work, we expect to take such cases only when they have shown decided gains and when they are ready to make a trial

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of work. We want to limit our care as far as possible to cases who can be helped to recover and taught how to live so that they may go back to *work* without danger of relapse. Merely keeping such cases alive indefinitely is not part of our scheme.

Very early in the plan, when seeking to limit its scope as much as possible, we decided that women had much less opportunity of recovering from consumption than had men. The healthy outdoor occupations which were open to them, without their being a danger to those associated with them, were vastly fewer than those open to men. For that reason and because it has been found unsatisfactory to mix the sexes we deemed it best to limit the work to women.

We were tempted to borrow from Dr. Peers the use of the word "school," which means to those who are interested in this cause that patients are taught how to meet all the problems connected with tuberculosis, but we felt that Dr. Peers had done so much to make his school a satisfactory and powerful factor in this work that it hardly seemed fair to duplicate the name. From him and from several earnest workers in this field in the south we got much help in planning our work.

The finding of suitable occupation presented great difficulties. Many varieties of handicraft had been worked over at Miradero Sanitarium for the past fourteen years, where for its re-educational influence on the nervous system, various occupations for neurasthenics have been systematically tried out. Among these were leather carving and stamping, wood carving, bead work, weaving on looms, and instruction in botany, zoology, astrology and ornithology. The class members of the San Francisco Polyclinic Tuberculosis Class had made baskets of raffia and willow, but they possessed no market value. Patients were provided with material for various forms of hand work all with the same result, a product was turned out which had no special merit and frequently hours of time were spent on an object that at best could bring but a few cents. Besides this not everything made could be rendered sterile by any process of disinfection without risk of ruining the article. The objections to artificial flowers, straw-work, unwashable embroidery, etc., are obvious. Then, too, many of the women in the class were married and had children and households to care for and many of them had never had any training in handicrafts. The idea of making pottery came to us from Dr. Hall, who conducts at "Devereux Mansion," Marblehead, Mass., a remarkable institution for the care of nervous cases, in connection with which is a successful pottery, where part of the work is done by the patients. The history of a number of potteries in the country is associated in some way with providing occupation for educational purposes or for handicapped people. It is particularly true of the famous "Rookwood Pottery," begun in Cincinnati by Mrs. Maria Longworth Storer, more than 10 years ago, as well as the "Bowl Shop" in Boston by Mrs. Helen Storrow, who began by providing occupation for little Italian children off the streets.

In the two and a half years of our pottery experience at Arequipa we have in only a few instances had patients who earned their entire support, although at one time there were as many as four on this list. No one is obliged to go to the pottery and no one is allowed to go who is coughing, or who has within a week had a temperature as high as 99°. Our routine in handling patients is very much that of other institutions. On arrival they are put to bed and kept there until the temperature has been normal for several days, whether it has been above or below when they reach the sanatorium. If they are coughing excessively they are kept in bed until this ceases. When they wish to work in the pottery they are allowed to begin on one hour a day, and generally this means that they are put at something that requires no special effort. They are not paid until they have learned to do work that is of some actual assistance, and sometimes a week or so may elapse before they reach this stage. In the meantime, if conditions continue favorable their working hours are increased to two or three a day, none of them working more than five hours a day, and no one works on Saturday or Sunday. As much as fifteen dollars a week has been paid for the twenty-five hours of work accomplished by some of the girls before they leave, and as high as one dollar and fifteen cents for a few hours' work has been earned within three weeks of beginning the work.

The heavy work of preparing crude clay, now obtained largely on the premises, which must be ground through sieves, is done by orphan boys sixteen or seventeen years old, who are learning the trade, although paid sufficient wages to hold their interest. The entire management of the work is under the direction of Mr. A. L. Solon, the son of Louis Marc Solon, one of the most distinguished art potters in England in the last quarter century. The carrying out of the modeling is under the direction of Mr. E. Frey, who was for four years at Rookwood Pottery, who graduated from the New York School of Design and who worked later with St. Gaudens. The furnishing of designs and the critical supervision of the art feature of the work has been the generous contribution of Mr. Bruce Porter and Mr. Henry Atkins. It would be unfair not to mention the contribution to the success of this work which we owe to the interest of Mr. F. W. Dohrmann, of the Dohrmann Commercial Company, who handles for us the vast majority of all the pottery that we sell. Mr. Dohrmann's interest as a layman in the problem of tuberculosis has made him a strong factor in the support of our work.

And now the question, Do we make it pay? There was a time in the beginning of the work, when the interest was very deep on the part of the public, that we more than cleared expenses. The manager at that time became somewhat too ambitious and a quality of work was turned out, very little of it made by the girls, for which there was no market. Under the present manager we have devoted ourselves to the type of things that the girls can do entirely. The pottery that you see is their work, and under this same manager,

barring the salary paid him, much more than half the money paid in wages is paid to the girls.

At present our expenses at the pottery, of about six hundred dollars a month, are almost met by our sales, the deficit of about one hundred and fifty dollars a month being met by friends, and we hope by advertising to increase the sales sufficiently to put the work shortly on a successfully paying basis.

We have had frequent cases where no special gain was made until they began to work, and no girl has had to give up work because of any bad effects. There is a generally better atmosphere about the sanatorium on the days when the girls are at work, and considerable ability in modeling and decoration has been uncovered in a large number of them. Much of the work is simple enough to require no special aptitude, and the girls teach each other, so that the labor of supervision is reduced to a minimum.

It is gratifying that in no single instance have the employers of the girls with early tuberculosis refused financial assistance to their employees at our solicitation. We have sought to secure this co-operation, not on the grounds of charity, but as a contribution to the cause from business and manufacturing houses, and we have limited our requests to cases where the women have held their positions for at least one year and have tuberculosis in its early stage. From the Emporium, the White House, the Pacific Telephone Company, Rosenberg Brothers and numerous others we have had one or more cases. Private individuals have assisted in paying the way of about one-quarter of the girls. The Associated Charities of San Francisco, through the Red Cross Fund, have sent us a large number of patients until now, when their funds are exhausted. Fraternal and social organizations have paid for eight or ten girls. It is evident from our experience that at least one-third of the patients must be helped financially, to remain under care as long as they ought to remain.

We have been able thus far to help every girl to stay at Arequipa even after her money has been exhausted, until other conditions made her departure or discharge necessary.

Unless we can take only girls so little handicapped by their disease that they can go to work in the pottery soon after arrival, or unless some one gives us a number of endowed beds, it is going to be impossible in the future to keep up the work of raising money to keep girls in the institution. We have felt that our labor should end in providing them at a minimum cost with the best possible care and surroundings. If we extend our efforts further, it seems to us they can be more profitably expended in educational work along health lines among San Francisco working girls.

SOCIAL INSURANCE IN ITS RELATION TO TUBERCULOSIS.*

By J. N. FORCE, M. D., Berkeley.

Tuberculosis is the "great equalizer." With

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the exception of those individuals whose income is derived from an invested principal, every case of advanced tuberculosis must eventually accept charity. The charity may be either public, as the clinic or county hospital, or private, measured in terms of the transferred work and wages of some relative. The average physician dislikes to assume charge of a case of tuberculosis. That is why so many people are sent out to Arizona. There is no advancement, financial or otherwise, to be obtained from watching over the last days of a middle-class consumptive. There is only an opportunity to contribute to the before-mentioned private charity, by not sending a bill afterwards.

The especial aggravation lies in the fact that the disease is so absolutely and entirely preventable and its control is so well understood. We know exactly what to do for every case of tuberculosis in every stage of the disease—if he has money enough. We know how the offer of free treatment in a clinic will act as bait to catch a single case, and by means of a visiting nurse, we know how to catch the rest of the family. We also know just what to do for all the members of that family—as long as the money holds out. We know how to run a cottage sanitarium, a day camp, a night camp, an out-of-door school, a hospital for advanced cases and all the other machinery—if we have gasoline and oil enough.

It is remarkable sometimes how quickly tuberculosis will bring a family down to the charity basis. I once knew of a family consisting of father, mother and four children. The second child had coughed up blood, the third child had a chronic cough and the fourth had a cold. The father was on a good salary and the family lived in an excellent residence district. In less than a week after the diagnosis was made, the mother had taken the three younger children to a cottage colony, the father and oldest daughter remaining behind to "break up housekeeping." Hardly had the family reached the colony before the father "lost his job," with the result that the family has been living on medical charity ever since, and the mother has been taking boarders to pay the cottage rent.

The administrative and medical standards of most of our county hospitals do not appeal to the working man. Carrying as they do the stigma of poverty, often associated with a poor farm, distant from centers of medical activity, inaccessible to the hard working members of the patient's family, is it any wonder that they are regarded as infernos of abandoned hope? The families of a certain class have a mortal fear of being broken up. So we have the paradox of a man concealing his disease, so that he may continue with and work for his family, while at the same time he is sowing the seeds of destruction among them.

In order to save the children while caring for the adults, it is evident that any solution of the tuberculosis question must consider the entire family and deal with the financial problem involved in a recognition of this social unit. Open air schools are good, the Arequipa pottery idea is good, the farm idea is good, but they all depend for their highest efficiency on the care of early cases, and how are

you going to get the early cases if your patient or even his doctor hasn't suspected the presence of tuberculosis in the children of the tubercular environment? Provision for state hospitals for advanced cases, or departments of tuberculosis in connection with county hospitals are justifiable *curative* measures, but there will be no real *prevention* of tuberculosis until we can transplant an entire family into the favorable soil of a cottage colony without one cent of expense to that family. There is only one basis on which this ideal condition can be made possible, not as charity, but as a right. That basis is—Social Insurance.

Some medical men do not approve of social insurance. They complain that it will bring down the prices of medical service. These gentlemen evidently haven't considered averages. What is the difference, between the man who, with the aid of a collector, gets 50% of his earnings on a three dollar a visit basis, and the man who gets 100% (no collector) of his earnings on a one-fifty basis? Under the provisions of the British National Insurance Act, the 20,000 state physicians, last year, received an average of \$1150 each, over and above income from private practice. An increase of the average physician's income by \$1000 means more business for everybody, consequently more early cases seen, and an inevitable lowering in the morbidity statistics. The British state physicians are already saying to the state: "We find that the people are not in need of drugs, as much as better food and improved industrial and housing conditions; you are wasting money on curative measures that should be spent on prevention."

In Germany, the insured workman can retire to a "preventorium" when he is "run-down." Can not each one of us think of some one now engaged in "taking the cure," who might have "taken the prevention" two or three years ago at great financial advantage to himself?

We hear a good deal nowadays about medical examination of employees. If industrial establishments and corporations took out tuberculosis insurance for their workers, it is easy to see that examination for entrance into the service of that corporation or establishment would be strict, and no condition would be tolerated in the industrial environment which might lower the resistance of the worker. Many organizations in this country have made progress along this line. The Metropolitan Life Insurance Company maintains a sanitarium for its tuberculous employees and conducts a system of welfare work among its policy holders. I am informed by Mr. F. A. Wickett of the New York Life, that his company will insure the life of any person suffering from a disease whose mortality rate is 200% higher than the normal mortality rate for the age of the person desiring insurance. It would be but a step further for the insurance of a disability policy to a family group, none of whose members showed open lesions, i. e., whose sputum contained no Much's granules and did not cause tuberculosis by inoculation of a guinea pig. The holders of such a policy would be compelled to answer certain questions at the time of paying the annual premium, or preferably

would be given a medical examination. In the first event, any answers comparing poorly with the answers of preceding years would lead to an examination. Cancellation of the policy would be consequent on failure to act on resulting advice. The instruction and welfare features which have already been developed would be extended.

It would be more in accord with our modern socialistic tendencies to add tuberculosis insurance to the present state industrial insurance. In this event, contracts might be made with existing tuberculosis agencies until the insuring body could provide its own equipment. The one essential in any scheme is to consider the family as a unit and supply the needed service for each member. Needless to say, the benefits of tuberculosis insurance should never be paid in money. This would lead to many abuses. There would be need of relief centers to which families could be transported. Removal of the patient only, special nursing service, or the payment of fees to local physicians for the care of adult policy holders would not reach the preventive aspect of the question, for at best these efforts would only affect the patient, and he might be a victim of a "carrier" from a preceding generation of his own family, who might in turn if undetected claim his children as victims.

We have in California an Association for the Study and Prevention of Tuberculosis. It is like every other society of its kind in the country. It appeals to the philanthropic few. It should appeal to the selfish many. It should offer something definite to the great middle class, which means everybody whose income is not derived wholly from invested capital. State medicine is coming; the private physician will sometime be classed with the private school teacher. Even the "stand-patter" must admit that he derives no benefit from his tuberculous patient. Why not foster true preventive medicine, by assisting in the perfection of a plan for converting our state association into "The California Association for Insurance Against Tuberculosis?"

INDUCED PNEUMOTHORAX.*

By EDWARD VON ADELUNG, M. D., Oakland.

Pneumothorax is now a recognized method of treating pulmonary tuberculosis. First suggested by Carson, an English physiologist, it was first actually practiced by two men independently, Forlanini in 1892, and Murphy in 1898. It depends for its rational explanation on a fact long recognized in relation to surgical tuberculosis,—rest for the affected organ. Indeed, many attempts had been made to secure rest for the lung by means of bandages, plaster casts, adhesive strapping, and other devices, before the far better method was developed, that of introducing gas into the pleural space to secure collapse of the affected lung, thus obtaining physiological rest of the organ.

Two methods are accepted for the introduction

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of the gas: the Forlanini or blind method, and the Brauer or open method. The former is accomplished by simply passing a hollow needle through the thoracic wall till its lumen lies within the pleural sac. The Brauer operation comprises incision, dissection, and the passing of a catheter through a slit in the parietal pleura. While both operations have their advocates, the writer favors the Forlanini puncture.

In practicing either operation certain accidents may occur. Subcutaneous emphysema is due to leakage backwards through the pleural opening, the gas collecting and burrowing in subcutaneous tissues. While at times very distressing, this complication must be regarded rather as an inconvenience than as a danger, for it has never been followed by serious consequences. The second accident to be mentioned is hemorrhage from the opposite lung (when diseased), when it expands to compensate for the compressed lung. While this is a rare accident, it occurred in two of my series of 42 cases. Neither case was serious, however. Again, in introducing the needle through the chest wall, it is not uncommon to pierce the lung unintentionally. If the lung is adherent, a common condition, this is unavoidable. However, I have never seen more than temporary pain or transient blood-stained sputum result. While it is doubtless possible to infect the pleura from the lung in this way, this really happens rarely. It is nevertheless to be avoided as much as possible. In early inflations or when high pressures are induced, dyspnea is likely to occur. It is usually temporary, disappearing in twenty-four hours, except in serious bilateral cases. It is to be avoided by attaining full compression only after several inflations, and by avoiding high pressures.

An accident of some consequence is pleural effusion. It is accompanied by a train of unpleasant symptoms, and may become an empyema if infected. Otherwise a few weeks or months suffice for its absorption and no ill effects follow. It may be regarded as Nature's effort to the same end as pneumothorax,—compression,—and does not forbid inflations unless causing considerable pressure. Pleuritic effusion is a rather common complication, resulting according to some authorities, in 50% of the cases. In my series of 42 cases I had only six effusions,—about 14%.

The most serious of the accidents are pleural reflex, and gas embolism. The distinction between the two conditions clinically, is not clear. Both present the following syndrome: fainting, pallor, convulsions, and perhaps temporary or permanent paralysis, usually in the form of hemiplegia, and occasionally death. Forlanini regards "pleural reflex," or "pleural eclampsia," or "pleural shock" as a distinct entity, and supports the contention by animal experiments. Still, Sampson and Brauer attribute the syndrome to gas embolism in all cases. Personally, I have met with no such accident in over 614 inflations, though I have seen the syndrome in a dog following a large and rapidly induced pneumothorax. The paralysis disappeared in the dog in a few minutes. Whatever

may be the cause of this syndrome, it is important to note the means of avoiding it.

A preliminary injection of morphine hypodermically, is recommended as a preventive, and probably serves the purpose. But the writer considers it unnecessary and objectionable for the usual reasons. The Brauer incision, which permits the avoidance of gas embolism by allowing the operator to see where the gas is delivered, is urged as a preventive. Others prefer to inject saline solution or oxygen on the theory that these do no harm in the blood current, and if it is found that the needle is not in a vessel then nitrogen may be allowed to enter. The writer's conviction in this matter is that pleural reflex, such as results from the injection of irritating fluids into the pleural sac, and gas embolism are both to be avoided by using warm and moist nitrogen, and by anesthetizing the pleura properly, and by accepting the manometer reading as the guide. Not until the manometer registers a sustained mean negative pressure with oscillations, should gas be allowed to flow. This refers to the needle operation, the only one with which the writer is experienced.

Considerable study has been made of the indications and contraindications for this operation, but writers are still at great variance. While at first only hopeless cases were considered suitable, soon well advanced unilateral cases were accepted, and now there are those who advocate the operation in all stages of the disease. The American discoverer of therapeutic pneumothorax, basing his opinion on the mechanics and the rationale of the operation, stated very early that the procedure was especially adapted to early cases when adhesions are not likely to be present, and while the lung is elastic and capable of collapsing. In a very recent article, fourteen years after his first utterance, he reiterates that view, and concludes that artificial pneumothorax should always be tried in every case of pulmonary tuberculosis where there is no absolute contraindication. While fully aware of the danger of radical views, indeed while instinctively conservative, the writer feels convinced from experience that Murphy's view of the indication for pneumothorax is correct. It is of course readily admitted that ultimately there will be found a certain class of patients, perhaps the earlier cases, that will yield the best results. But this does not interdict the use of the operation as an alleviative measure—to stop cough, to control hemorrhage, or to prolong life for a time—in other classes of cases.

The pathology of pneumothorax is particularly suggestive of its value. According to Forlanini, Saugmann, Graetz, Warnecke, and Kistler, the most important tissue changes are the following: There is marked fibrous formation, and evidence of advancing disease cannot be found. Old caseous areas are surrounded by dense fibrous tissue. The alveolar epithelium is transformed into the cuboidal or columnar type. The lymphatics are dilated and richly pigmented, a condition indicating marked stasis of the lymphatics. The circulation of the blood is likewise altered. Even after long compression, when released, the alveo-

lar cells re-expand and again functionate normally. Thus the pathology expresses the beneficial effect of the procedure.

From the evidence thus far adduced it seems to the writer that induced pneumothorax has a proven value, and should be used very generally in the treatment of pulmonary tuberculosis. I believe also that theory, pathology, and the little clinical experience recorded in this particular, all unite to indicate that lung compression should be employed in early cases as well as in advanced cases. Only distinct contraindications, such as extreme dyspnea, marked asthenia, grave implication of other organs, or mechanical barriers such as adherent pleura, or pulmonary fibrosis,—only such conditions actually contraindicate its use as a cure or as an alleviative.

The writer's experience is limited to 42 cases, in which he found pneumothorax impossible in only 5 (Forlanini operation). However, it should be stated that some of the remaining 37 cases allowed of the introduction of only small amounts of nitrogen, in some cases of no therapeutic value. The total number of inflations was 614, and all pneumothoraces were confirmed by radiograms. There were no pleural reflexes or gas emboli. In six cases pleuritic effusion ensued, one of them becoming purulent. All the cases except one were well advanced bilateral infections. And all but one were ambulant patients, treatments being given either at the office or at the clinic. Of the 37 cases in which pneumothorax was obtained, 8 were unimproved and 29 improved, of which one is entirely free from symptoms.

DIAGNOSIS, SIGNIFICANCE AND TREATMENT OF BRONCHIAL GLANDS IN INFANCY AND CHILDHOOD.*

By WILLIAM PALMER LUCAS, M. D., San Francisco.

The problem of early tuberculous infection is becoming more important as we realize that the primary infections remain dormant for long periods of time rather than short. Our conception of these primary infections has changed radically during the past few years. Among students of tuberculosis there are now recognized three fairly definite stages or periods through which the average tuberculous case proceeds. This is somewhat analogous to the three stages of syphilis. (1) The primary infection in tuberculosis as in syphilis is an infection of the regionary lymph glands which as a secondary process (2) spreads to neighboring structures by direct connection as the peribronchial tissue from the bronchial glands, and (3) what is now spoken of generally as tuberculosis is really the tertiary form of tuberculosis and occurs often years after the primary infection, spreading diffusely not only to neighboring structures, but often to far removed organs, and has a tendency, which the other two forms do not have, of producing cavities. It is a fact worthy of consideration that the majority of primary infections run a chronic course rather than

an acute. The main exceptions to this are found in tuberculous infections occurring in the first few months of infancy. Infections occurring after the second year are more apt to be chronic than acute. Further exceptions are the types of general miliary tuberculosis and tuberculous meningitis, which often is simply the meningeal manifestation of a miliary or acute diffuse process. The primary stage of a tuberculous infection is now conceded to effect mainly the glandular system, spreading as a secondary manifestation to neighboring tissues or organs. The primary and secondary involvements may have a fairly close time relationship, whereas it is more common to find the third stage appearing, if it appears at all, very much later.

The typical picture is a primary involvement of some one of the most important glandular chains. Thus a tonsillar infection leads to involvement of the cervical lymph chains. A primary bronchial gland involvement spreads through the different chains of glands surrounding the bronchi. Peritoneal glandular involvement follows the same general course involving the peritoneum. Secondary involvement from these chains is usually of the surrounding tissues. The glands themselves may not necessarily go on to caseation to infect the surrounding structures. It depends more on the number and rapidity of growth of the tubercle bacilli, and their egress to the surrounding tissue. If the glands do go on to rapid caseation we are more apt to have a disseminated acute tuberculous infection. That form we are all more or less familiar with and I shall not concern myself in enlarging upon it.

I wish especially to deal with the primary infection of the bronchial lymph glands. In order to do this I wish to take up briefly first the anatomy of the bronchial glands, especially their relation to infection during the period of childhood, leaving out of consideration infancy and later adult types of infection.

The anatomy of the child's chest is somewhat different from that of the adult. It is rounder and shorter, the antero-posterior diameter is greater than the lateral. In adults the ratio of these diameters is as one to three, whereas in childhood it is as two to three. The ribs are more horizontal which makes the position of the sternum higher and the angle of the ribs more obtuse. The chest is very much more compressible and elastic so that the respiration and cardiac conditions stamp themselves more easily on the contour of the chest. Thus the chest yields more easily to interthoracic pressure. The pull of the muscles tends to flatten the sides of the chest. The central portion of the diaphragm is higher. On account of the slope of the chest the lungs are situated more posteriorly, and the diaphragm from its high position encroaches upon the capacity of the thorax. The respirations are diaphragmatic. Expansion is likely to be irregular changing from superficial to deep so that the interval and depth of respiration vary so much within physiological limits that we have to be careful in laying particular stress on such find-

* Read at the Forty-fourth Annual Meeting of the Medical Society, State of California, Santa Barbara, April, 1914.

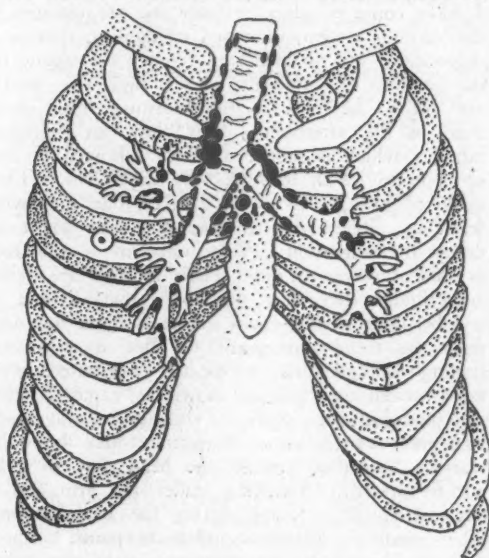
ings. The trachea is relatively larger, as are also the bronchi, and occupy relatively greater space, the air cells and parenchymal tissue are smaller in size and amount, whereas the interstitial tissue is more abundant. Certain changes in physical findings are thus accounted for. Dullness to the left of the upper sternum may partly be due to the presence of the thymus but is also partly due to the fact that the trachea is separated from the pulmonary apices by the aorta, carotid and subclavian arteries and esophagus. There is also normally a larger amount of lymphoid tissue present during early childhood.

Diagrams I and II show the anatomical relations of the glands anteriorly and posteriorly. It is seen how much variation in physical signs could result from the enlargement of the various groups. There are three main sets of bronchial glands, first the glands that accompany the bronchi and trachea. These may be divided into two groups: first the tracheo-bronchial glands, on the right and left of the tracheal angle, surrounding the trachea, the superior vena cava, the pneumogastric and recurrent laryngeal nerves; and second, the glands at the bifurcation of the principal bronchi. These are also in contact with the pneumo-gastric and with the pericardium anteriorly, the esophagus posteriorly, the pulmonary vessels lying below. The second group of glands are termed the pulmonary glands. These may be divided into two groups: first the bronchial pulmonary which lie at the division of the collateral bronchi into the lateral branches of the bronchi. These glands lie outside of the lungs and in contact with the bronchial and pulmonary vessels. The second group lie at the angle of the division of the small bronchi. These lie within the lungs. The third group, the hilus glands, are made up of the glands to the right and left of the tracheo-bronchial angle and of the glands in this neighborhood. This group probably plays the most important role in the primary infection of bronchial gland tuberculosis in children. It is a well known fact that these glands stay in the lymphoid state for a shorter period than do the cervical or mesenteric glands. Why they caseate sooner than these other two systems of glands, is not known. Normally these bronchial glands are not enlarged, nor visible any more than are the cervical. There is no constant way in which they become enlarged. Diagram III illustrates the way in which the bronchial glands extend out along the smaller bronchi, and their irregular enlargement would give, of course, various physical findings. The difficulty of interpretation would depend entirely on the situation of the enlarged glands in relation to other anatomical structures. Sometimes one chain of bronchial glands seems to be the focus of primary involvement and in others another chain. For this reason the findings vary in different cases. The areas involved are different, which accounts for the difference in physical findings. For instance, at times the area of dullness is triangular in shape with its base towards the median line, having its apex reaching into the pulmonary field. However, it is not

always triangular in shape. It is often crescentic or semi-circular, with its convexity either upward or downward. At times the areas are very irregular. The broadest area of involvements usually between the fifth and the ninth dorsal vertebrae, and in this case is more often crescentic in shape, the horns of the crescent reaching up into the apices and down into the bases. Sometimes the upper involvement is more extensive than the lower.

The physical findings are naturally very much harder to interpret on the left, where the bronchial glands are behind the heart and blood vessels, than on the right. Physical findings anteriorly are often difficult to elicit and on the left especially are often confusing. This is especially true in the region of the thymus. The left lobe of the thymus ordinarily reaches out during the first few years of life to one cm. beyond the para-sternal line. Below it often merges with the cardiac dullness and the resonant lip between the thymus and the heart may be absent from either the high position of the heart or from the position of the vessels or from the thymus.

The heart, on account of its more horizontal position, is higher than in adult life and is also more variable in its position, while the vessels are shorter and broader. On the X-ray plate the heart and vessels and thymus assume somewhat



No. 1.

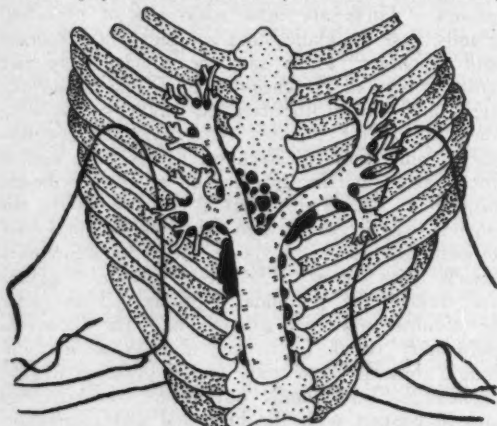
the appearance of a flask, the heart being the body of the flask and the blood vessels the neck and the thymus the mouth of the flask. See Diagram IV. Diagram IV illustrates the position of the heart, blood vessels and thymus in the chest, in relation with the chain of larger bronchial glands. It can be easily imagined how variation in the position, not only of the heart and vessels, but also of the patient, might change or vary the physical findings so as to make interpretation difficult. This shadow is mainly on the left in the area of the heart and somewhat more to

the right in the area of the vessels, with again an eccentric left position of the mouth of the flask which is the thymus. On account of the variable position of the heart and the vessels, the exact shadow in the X-ray varies considerably, and this variation is increased if care is not taken with the position which the chest assumes when the picture is taken.

With these anatomical findings in mind it is not to be wondered at that our physical findings are often confusing and that with glands undoubtedly present we often get no physical findings, so that in the consideration of any case it becomes important first of all to study the history of exposure. The importance of the history of exposure is especially true in children under five, as it is during these first years that we see most of the cases of acute tuberculosis. In the chronic glandular type which we are discussing, it is often not easy to determine the source of infection. It has, however, been clearly shown that gland involvement is almost always present in children where one or more of the family are tuberculous, even though there are no clinical manifestations. Clinical manifestations are also usually very indefinite. They are usually only definite in the acute types. The personal history of these subacute and chronic cases is significant in its indefiniteness. Among the earlier symptoms which I have come to place reliance on, are changes in the nervous system, increased irritability, change in disposition, fits of moderate temper or crying for no obvious or sufficient cause; they tire easily; are apt to be tired in the mornings even more than in the afternoons; they show an indefinite languor which is sooner or later followed by loss of appetite which may be very capricious. They evidence stronger likes and dislikes than they were wont to. They may or may not have slight attacks of indigestion. Very uniform is the lack or loss of tissue turgor. Their muscles are flabby and though they may not show marked loss in weight, their weight curve is usually quite fluctuant with the trend downward. Pallor is a general finding though this is usually associated with rapid vasomotor changes, shown by rapid flushing and paling of the cheeks. Tendency to cold hands and feet, which in a short time may be quite warm. Sweating around the head may or may not be present. Sweating under the arm pits is not infrequently found during the examinations. They complain often of indefinite pains. These may be located in the abdomen or in the interscapular region. Their temperature chart is often very irregular, tends as often to be subnormal as it does to be above normal. The rise in temperature is often in the morning, coincident with the time when they show the greatest fatigue, and will be down in the afternoon, when apparently from the stimulation of exercise their temperature equilibrium is also better regulated. There may or may not be a previous history of infectious diseases. Among the most important are tonsil trouble, pharyngitis, repeated colds, measles and pertussis, especially if they have been accompanied with infections of the upper respira-

tory tract, as bronchitis. In fact, anything that has lowered the resistance of the individual and has caused a local infection of the bronchial glands appears to be important in the etiology of a subsequent tuberculous infection. Whether the result after such a tuberculous infection is rapid or slow, depends primarily upon the number of organisms introduced. It is a question whether the body is able to accommodate itself to the number of organisms introduced. If the number of organisms introduced is large, the resisting power of the individual is rapidly overcome and acute tuberculosis follows. If, however, as is most often the case, the number introduced is small, there occurs a slow sensitization of the body to the tubercle infection.

The physical examination, as has been noted,



No. 11.

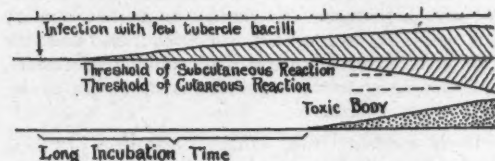
is often entirely negative. On inspection there is usually nothing to be seen beyond what is found in any child that is somewhat below normal. Percussion usually shows in the cases, where there are positive findings, anteriorly slight dullness to the right or left of the sternum. This, however, is often confused with thymus dullness and is almost impossible to differentiate unless, on auscultation, there are also changes in breath sounds accompanied, in the more advanced cases, with fine rales. Posteriorly the findings are mainly in the interscapular region. There may be pain on pressure over the region of the glands. I have found that interscapular resistance to direct palpation and percussion are the most satisfactory means, outside of auscultation, to demonstrate the presence of these glands. The percussion must be light, otherwise the waves are carried through the glands and we simply get the resonance of the lungs beneath. Often there is simply a feeling of resistance rather than any demonstrable change in percussion sound. It is well to carry the percussion both from above downward and from below upward, going from the center out as well as from the periphery in.

That the strength of the percussion is a very important point in the demonstration of glands, depends on the fact that such small objects as glands do not stop the harder percussion waves. The harder waves radiate out very much in the

shape of a truncated cone with the apex on the surface and the base in the chest. The lighter the percussion, the smaller will be the radiation and the nearer the base to the area of the glands. The harder the percussion the deeper the cone and the wider the base.

Auscultation is a very valuable means of demonstrating the presence of pulmonary glands. There is first of all a diminution in the pulmonary murmurs, the breathing is harsher and higher pitched, at times it is even bronchial. Bronchophony is increased. It is normally present to the third or fourth dorsal vertebra. Its presence laterally is an important finding, below the fourth interspace. In extreme cases it may be heard as low as the tenth interspace.

In examining the X-ray findings of the chest,



No. V.

one must consider the position of the trachea, the bronchi, and the median shadow, in relation to the glands. See Diagram IV. The bronchi and trachea lie entirely within the flask-shaped median shadow. The left principal bronchus reaches much nearer the clear pulmonary field than does the right. The bronchi run parallel with the borders of the cardiac shadow. The right principal bronchus passes over the right auricle then turns outward, and then downward, running parallel with the right cardiac shadow, but outside of it. On the left it always remains within the heart shadow and therefore can very rarely, if ever, be made out. The right hilus, however, lies just outside the median shadow, usually at the level of the fifth rib with the spine. The left is normally one interspace lower, or at the level of the sixth rib with the spine. In interpreting shadows in the radiograph we must hold in mind their topographical position, otherwise grave sources of error may arise. It must be remembered that the median shadow is often indefinite or irregular and varying in size and shape. Enlarged bronchial glands often fall within the area of the median shadow, and in such cases are not seen, and therefore often lead us to distrust our physical findings. Where infiltration of the bronchi exists or the glands outside the median shadow are enlarged, the radiographic picture is characteristic. We can discern in main three large types of involvement: First, those in which the glands, some or all of the groups, are enlarged. A second type in which besides the glandular enlargement there is a peribronchial infiltration, which corresponds with the second stage of tuberculosis, and this is the form most often met with in cases showing indefinite clinical symptoms. The third type shows the progress of the condition into the parenchyma which gives a very mottled, diffuse, indistinct appearance to the X-ray picture.

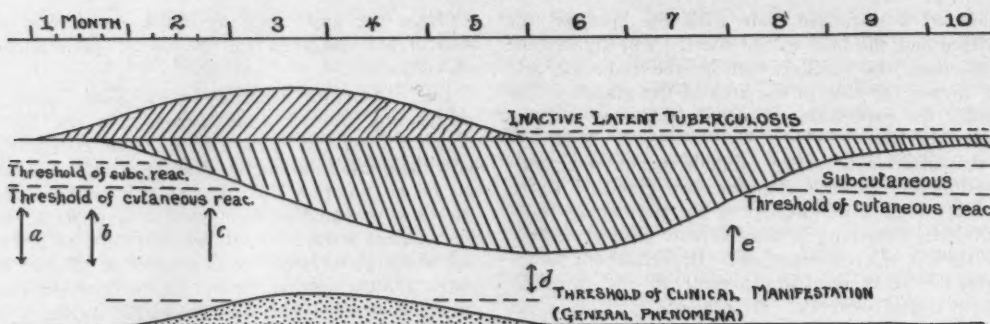
Often the appearance of blood vessels and the bronchi are mistaken for glands or peribronchial infiltration.

The tuberculin reaction is of great value in interpreting the physical findings and the X-ray picture, though it must be taken in conjunction with these other findings, rather than alone. There can be no question that the positive reaction indicates the presence of some tuberculous focus, but the problem always is how much weight to put on such findings. Often the case must be studied for quite a long period before a definite estimate should be made. The reaction simply indicates the sensitization of the body to the specific protein of the tubercle bacillus and the interpretation of this sensitization is the important point. A negative reaction may mean one of three things: First, that the threshold of sensitization is below that of the clinical manifestation from the ordinary tuberculin skin test. In such a case the sensitization could be increased by the interdermal or subcutaneous test, which in all suspicious cases where diagnosis can not be completed satisfactorily without this test, should be tried. Second, a negative reaction might indicate that the power to respond to sensitization was so diminished by an active process that there was no reaction to the skin test. In such cases the subcutaneous test is often carried out not without danger. The third indication which a negative reaction shows is the absence of any tuberculous infection.

Von Pirquet has demonstrated in graphic form very clearly the first two of these possibilities. See Diagrams V, VI, and VII; Von Pirquet's explanation is as follows:

* . . . "Roemer's experiments with tuberculosis show that the antibody formation can occur very late after an infection with few or with attenuated germs (Fig. V). In these cases the human organism is able to resist the infection and to overcome it in time. Clinical facts to which I allude are the bronchial infections of older children and Figure VI explains the train of events. In this figure the time is marked in months instead of days. The antibody, although slowly formed, preceded the growth of large masses of tubercle bacilli and so is able to overwhelm them. After some time the allergen begins to decrease; that means that the bacilli are localized. A very small amount of toxic body is produced; the clinical symptoms hardly reach the threshold of manifestation. After several months practically no more allergen is present in the organism; the antibodies, however, are present for a much longer time and decrease only slowly.

"We can distinguish several periods in this type of weak tuberculous infection. During the first weeks (a to b in Fig VI) tubercle bacilli are slowly growing with no clinical reaction. This is a period in which tubercle bacilli may be found only microscopically, or by injection of the tissues in animals (Bartel's lymphatic state). Between b and c the antibodies slowly increase just as the tuberculous process does, but the formation of toxin is a slight one, so that the general symptoms do not reach the threshold of clinical manifestation. Between c and d the struggle is at its height, leading for some time to general symptoms, such as loss of appetite, anemia, fever, but is terminated by the successful fight of the antibodies against the bacilli. In the period d to e therefore the allergen, i. e., the tubercle bacillus, does not play any role in the general system, but the



No. VI.

existence of the antibodies can be proved by the tuberculin reaction. After *e* the antibodies fall below the level of the cutaneous reaction. The antibodies must be present in the tissues of the skin in a certain concentration, in order to give a positive cutaneous test with undiluted tuberculin. If we inject the tuberculin into the subcutaneous tissue, we can still elicit positive reactions. The level of the subcutaneous reaction is a lower one, as is shown in Figure VII, which is supposed to form the continuation of Figure VI after point *e*. A minimal amount of antibodies is present, an amount not only below the cutaneous but even below the subcutaneous level. An application of tuberculin in any way arouses a renewed formation of the antibodies. When the new-formed antibodies enter the circulation, we expect to see some phenomena corresponding to the "accelerated reaction." This is exactly what happens if we make a skin test; we find local papule formation occurring between the fourth to the seventh day. If after that date we make again a cutaneous test (point *b* Fig. VII), we get an early reaction ("secondary reaction"). Generally the organism cannot be stimulated to further production of antibodies by means of the cutaneous inoculation, and a following cutaneous test *c* elicits the same size of papules. After some time the antibody content of the organism decreases again. Let us suppose that it stands between the level of the cutaneous and the subcutaneous reactivity. If we make a cutaneous test at point *d*, Figure VII, we would get no reaction, but if we inject say 1 mg. of old tuberculin subcutaneously, we get a Stichreaktion. This procedure stimulates a renewed antibody formation, and at point the cutaneous reaction will again become positive."

That this sensitization does not run parallel with the degree of immunity which the individual possesses is often shown in many clinical cases, although we use it as an indicator of the degree of immunity, and this may be done when it is carefully weighed with all the other findings in the case.

Autopsy reports have shown that bronchial glands are more often involved than any other group of glands, though such findings have usually been in combination with other lesions, usually pulmonary or more or less generalized lesions. About 96% of all tuberculous children's autopsies show involvement of the pulmonary glands associated with other pulmonary or glandular involvement. It has been shown by many examinations that about ten or fifteen per cent., in some cities as high as 25%, of these glands are infected with bovine bacilli. The number, of course, depends primarily upon the extent of bovine tuberculosis or with the care with which milk is handled. There can be but little doubt that the primary

involvement is aerogenous and is located in the lungs itself, near a bronchus but subpleural. After a time of incubation the regional glands are involved. Often cervical glands are even secondary to these. It is generally conceded now that the subsequent forms of tuberculosis, pulmonary, osteal, and meningeal are tertiary forms or stages of infection.

It is evident from clinical histories of these later cases that the earlier symptoms are often overlooked and tuberculosis is only suspected when these late secondary or tertiary forms appear, such as phlyctenular conjunctivitis, serous pleurisy, peritonitis, pericarditis, cervical adenitis, or tuberculous osteomyelitis occur, or as in later life, we get the generalized pulmonary tuberculosis with the secondary stages less pronounced.

The prognosis depends somewhat on the age of the child. This is evident when we consider that 80% of the children infected during the first few months of life die under one year of age, whereas 20% die during the second year and 10% during the third. So that it is an important question when the child becomes infected. It is easier, of course, to limit the source of infection during the first two years which is either direct contact with tuberculous individuals or from infected. That the milk question must play a definite role in this state is shown by the last report of the State Agricultural Experiment Station, in which we find that "of the 8000 head of cattle examined under the direction of the Veterinary division of this station, approximately 2500 have reacted to the tuberculin test." The report goes on to say that "the loss from this disease in California alone is estimated at over half a million dollars a year. The loss appears to be increasing. Reports of meat inspectors in San Francisco and Los Angeles indicate that the proportion of cattle from certain ranges which are affected with tuberculosis has increased from one to five per cent. in five years." It would probably be illuminating for the State Medical Society to carry on a parallel investigation as to the increase of tuberculosis in the regions to which these ranges supply milk.

The insidious character of these early infections is hard for such a public as ours to grasp. We too often ignore early means of prevention and put most of our stress in too late curative attempts. It is fortunate that in so many cases the number of organisms introduced at any one time

does not overwhelm the body and that in the great majority of cases immunization keeps ahead of infection, and unless some acute intercurrent infection appears during this process of immunization, such as measles and pertussis, which lowers the resistance of the child, we do not hear from these early infections until later, the first sign often being in early adolescence or early adult life when the strain put on the whole system increases to such a marked degree that their general tolerance is lowered. We usually find these late cases appearing where the nervous or physical system has been overtaxed, though, of course, this does not hold true in all such cases.

Besides age, in forming our prognosis, we must consider certain other factors, such as gain in weight. This, however, is not prognostic in all cases, as I have had occasion this past winter to follow several cases which increased in weight quite satisfactorily, but whose glandular involvement also increased. Temperature also is of prognostic value. In nervous children, however, it must not be considered as important as it is in adult life, as we not uncommonly find this group of children running irregular temperatures without any immediate cause or with cause which we only find later. A morning temperature is often more valuable in prognosis than an afternoon temperature. The condition of general muscle tone, the condition of the heart, and vaso-motor system, must be carefully considered. The appetite is often variable, though this in itself is certainly no definite sign. Sweats we know occur in children very much more easily than they do in adults. Very many children under par, sweat at night quite profusely. The physical findings, as I have said, are very variable, as I have outlined in the following chart of the Symptoms Complex of Tuberculosis in Children:

SYMPTOMS COMPLEX OF TUBERCULOSIS IN CHILDREN.

History

Exposure in home.
Exposure to infected milk.

Previous Illness.

Adenitis.
Tonsils and Adenoids.
Bronchitis.
Whooping cough.
Measles.
Pott's Disease, etc.

Symptoms.

Loss of weight or failure to gain consistently.
No appetite Listlessness.
Cough Night Sweats.

Examination.

Irregular temperature 99 and upwards
Constantly elevated pulse 100 and upwards
Pallor.

Lungs—Signs at apex or base of Enlarged Glands
Increased vocal or tactile fremitus.

Or—Broncho-Vesicular breathing.

Limited Expansion.

Persistence of fine rales over limited area for several weeks.

Bronchial Glands.

Giving persistent signs for several months

As { D'Espines sign.
Paravertebral dullness.
Vertebral dullness and resistance.
Enlarged Thoracic Veins.

Positive X-ray Examination.

Positive Tuberculin Test.

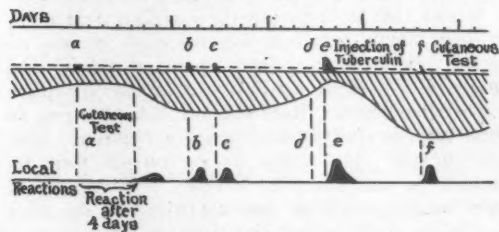
Positive Sputum (only in advanced cases).

(In the above outline chronic endocarditis and glandular enlargement after measles and pertussis should be excluded unless persisting for several months.)

When we find symptoms of constant loss in weight or failure to gain consistently, little or no appetite, listlessness, easy fatigue with cough and night sweats, and find in our physical examination an irregular temperature, a constantly elevated pulse of over 100, pallor with vaso-motor disturbances, physical findings in the lungs, with signs at either the apex or base of increased vocal or tactile fremitus, or broncho-vesicular breathing, with or without limited expansion, and the persistence of these signs with fine rales over a limited area for several weeks, we must be suspicious of tuberculosis. When the bronchial glands alone are involved we may only get the persistence over several months of D'Espines sign, para-vertebral dullness, or vertebral dullness and resistance, and perhaps enlarged thoracic veins, with an X-ray picture which shows during these months' extension of the glandular process either to other glands or an increase in peribronchial infiltration. With repeated positive tuberculin tests there can be no doubt.

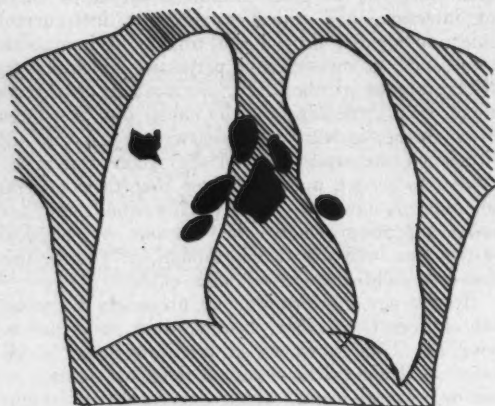
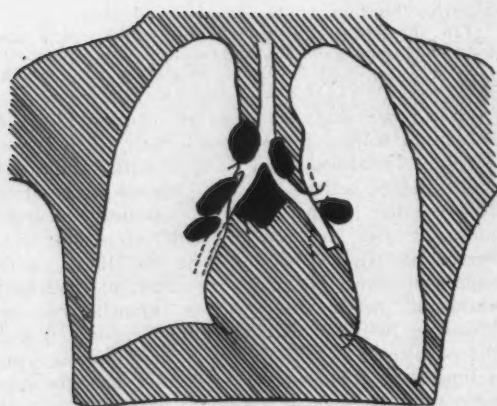
Sputum is often most difficult to obtain. In fact in these chronic glandular involvements tubercle bacilli can only be demonstrated by close microscopic examinations or by animal inoculations of the glands. Microscopic appearance of these glands often shows nothing characteristic of a tuberculous infection, simply showing a hypertrophied gland. So that sputum examination in young children and in children where bronchial gland infections are suspected, cannot even be counted on for diagnostic evidence.

That bronchial glands occur in other conditions



No. VII.

than in tuberculous infections must be conceded, and at times these glands persist for long periods is also certain. I have been able to demonstrate the persistence of these glands in such conditions as chronic intestinal indigestion in infants during the second year and even during the first year, which after months cleared up. The same is true of such infections as rheumatic fever with cardiac involvement. In such cases we get enlargement of the bronchial glands, especially of the hilus group, which may be due either to circulatory conditions, or to the rheumatic infection. We see enlargement of the bronchial glands in a considerable number of the acute infectious diseases and in these infections this primary involvement



is certainly not always tuberculous, as they very often clear up when the acute infection is over, though it often takes months for them to entirely disappear. However, I see no reason for supposing that we may not have bronchial gland involvement the same as we have cervical gland involvements from other causes than the tubercle bacillus. In all such cases the glands disappear and the other symptoms which I feel are necessary to make the diagnosis of tuberculous bronchial adenitis, are absent, or at least not persistent. In such cases, of course, it is impossible to make a diagnosis unless the case is kept under observation. During this period of observation such cases should be treated in an expectant manner. They should have the outdoor treatment just as much as a case which we consider or know to be positive, as they are certainly most fertile ground for tuberculous infection. I believe that it is during these periods that many of such simple bronchial adenitis cases become infected. Besides out-of-doors treatment for all such cases, restriction of activity is an important point to be considered. Recuperation from fatigue in these cases is always longer than in a normal child, and for this very reason during fatigue their resistance is unnecessarily lowered. They should have longer periods of rest and sleep. Their food should be high in calories, keeping their proteid equivalent high. If there is involvement at the same time of intestinal glands, or if there are intestinal symptoms, it has been found advisable to limit the quantity of fat in the diet. A high proteid and carbohydrate diet with a moderate fat diet, I have found most successful in such children.

The question of tuberculin treatment is at present a very much mooted one. It is certainly in the experimental stage of use. It is only a form of medication, not really a form of treatment, and must always, when used, go in combination with the most thoughtfully worked out plan of treatment. However, in the glandular cases, I feel that it has more chance of application than in any other type, for what we want to do is to raise

the resisting power of the individual, to make them more active in their protective power. If tuberculin is to be used, it should be started in very small doses. I usually start with one ten-thousandth of a mg. and then if there are no local reactions in the gland, no rise in temperature, gradually increase the dose by weekly or bi-weekly injections until the child is taking one-tenth of a mg. It is very rarely possible to go above this dose in young children. There are various forms of tuberculin available for use. Dilutions of Koch's old tuberculin is perhaps most generally used. A form of tuberculin which is now being used a good deal in children is Rosenbach's tuberculin, which is tuberculin formed from tubercle bacilli, which have been grown with trichophyton. This form of symbiosis is supposed to modify in some way the toxic property of the tubercle and not change its anti-genic property, which is the property of producing anti-bodies to the tuberculin toxin. Vaughan suggests that what we need is a specific tubercle protein sensitizer, and he and Wheeler have been attempting to produce such a vaccine, but so far have not been able to produce a uniform product. However, from Vaughan's work it seems that when he is able to produce a uniform specific protein sensitizer for the tubercle bacillus, that we will have the most ideal method of actively protecting against tubercle infections. However, until that time we must use all hygienic and preventive measures possible. This in any community can only be done by an intelligent study of the cases, the co-operation of physicians with institutions, and careful home treatment. Certainly it is only in the prophylactic and preventive measures that we can hope to stamp out tuberculosis, which is not only on the increase among our cattle in this state, but is also on the increase in our human population, which should be of vastly more importance to us.

I have been unable to find any definite statistics as to the prevalence of tuberculosis of children in this state. The need, however, for such a study is perfectly clear in my mind from the short con-

Table No. IX, Showing the Analysis of 122 Case Histories from the University of California Hospital and Out-Patient Department, Classified by the Following Diagnoses:

*Diseases of Respiratory System.....	69
Tonsils and Adenoids.....	12
Tuberculosis	10
Intestinal Diseases	11
Mentally Deficient	5
**Miscellaneous	15
	122

* Bronchitis, broncho-pneumonia, adenopathy, cervical adenitis, pharyngitis.
**Chorea, scorbatus, richtis, measles, endocarditis, pertussis, pseudo-leukemia, typhoid, epilepsy, empyema.

Positive Findings from Lungs and Glands.							
	Inspection	Palpation	Percussion	Auscultation	Adenopathy		
					Cervical	Axillary	Inguinal
Total No. findings	16	3	75	101	83	31	37
% of 122 cases	13.93	2.45	61.47	82.78	68.03	25.40	30.32

Tuberculosis Findings—49			
	Pos. VonP.	Negative VonP.	No test made
Number	35	14	73 or 59.8% of 122 cases
% of 49 taken	71.42	28.57	

X-Ray Pictures—40.	
	Positive Gland Enlargement
Number	33
% of total (40)	82.5
(Of 122 records, only 40 (32.78%) had X-Ray pictures.)	

Wassermann Findings.		
Positive	Negative	None taken
0	17	105

tact which I have had with the children of San Francisco.

The following table (Table No. IX), which is a study of 122 cases at the University of California Hospital, shows the prevalence of tuberculous bronchial gland involvement. The table, I think, speaks for itself. Certainly I have not enough data, nor do I think exact data exists in this state, to draw any definite conclusions as to local conditions. I hope in the future to be able to have some definite figures both for city and state prevalence of tuberculosis in children.

X-Ray Findings from Hospital Cases.

No. 6613. E. C. Child in the hospital for two months as a feeding case. Diagnosis, chronic intestinal indigestion. Child five months old. During the period while she was in the hospital, as seen by the three X-rays, she had several attacks of bronchitis, which is a very common occurrence in such cases. Tuberculin test entirely negative. She ran no temperature and condition in her lungs could certainly not be called tuberculous. This series illustrates a type of glandular involvement in the chest which is due to recurrent bronchitis, which in itself is dependent on the lowered condition of the child due to metabolic state.

No. 6461. F. G. Four years old. This series illustrates type of bronchial gland adenitis which is undoubtedly of tuberculous origin. The child had intercurrent bronchial trouble for a period of over a year, had lost in weight and had had some digestive trouble, at one time becoming so acute that she was operated on for her appendix. Appendix found normal. She ran a constant temper-

ature from 99° to 101°, had a slight cough at times, night sweats, even under the best hygienic conditions, before treatment was begun.

The first of the series was taken in November, 1913, the last in March. During this period she was under constant observation and treatment. She gained in weight, temperature became practically normal, though the glandular condition has progressed. No alveolar infiltration and with continued treatment and constant observation, prognosis at this age should be good, unless there is parenchymal involvement from a breaking down of the glands, or peribronchial infiltration. Her physical examination shows a well-developed girl of four years. Her chest is slightly asymmetrical, the right side being flatter and broader than the left. Interscapular dullness with a few rales at both bases. Both apices slightly more resistant than normal. There is increased bronchophony throughout the interscapular region as far as the seventh dorsal interspace.

No. 6856. G. B. Age eleven years. Child in the hospital during January and February. Entered as lobar pneumonia. This involvement is seen distinctly in the first plate in the region of the lower left lobe, but it is partly hidden by the heart, but is seen to radiate downward. Also small irregular areas of consolidation in the right interscapular region. Bronchial-tracheal glands seen enlarged throughout. The glandular involvement is seen better in the second plate. The tuberculin reaction was very slow in developing. It did not reach its maximum until the fifth day, then measured 9 mm. and was somewhat raised, but was not vesicular.

This series illustrates a condition which should be kept under observation for a long period without making definite diagnosis of active tuberculosis. The child having had such a diffuse pneumonic process, and with so many tracheal-bronchial glands involved, is, to say the least, good ground for tuberculous infection, and as there is a positive tuberculous reaction, it shows that there is already a latent infection. The age, which is just before the adolescent period, in this girl would indicate also the need of more careful supervision. In a case like this positive diagnosis cannot be made, but the case should be treated with a long convalescence going over a period of at least two or three months, until we are absolutely sure that the glands are quiescent and there is no chance of any extension.

Physical examination in this case showed very diffuse bronchial pneumonia, slight involvement in both apices, the largest area being in the left lower back, but also some involvement in the right lower lobe, with very marked general diffuse signs of bronchial gland involvement, increased interscapular dullness, and vocal fremitus. Temperature in this case, after the crisis, continued sub-normal.

Late note: This case has been followed for a number of months in the O. P. D. The chest condition has been clearing up. She has gained in weight and is not running any temperature. It would be safe now (June) to say that she is not an active tuberculous case at the present time, though I feel sure she would have been if she had not had a long convalescence.

No. 6588. W. O. Nine years old. Admitted to the hospital with an acute intestinal indigestion. Gave a history of chronic intestinal trouble for a number of years. His acute intestinal indigestion was of only very short duration before he was admitted to the hospital. That cleared up very rapidly. The examination of his lungs showed that the right side was slightly larger than the left and that there was considerable interscapular dullness and increased vocal fremitus down to the sixth dorsal interspace. There was slight sinus arrhythmia. Von Pirquet was markedly positive to both human and bovine. The X-ray shows marked involvement

of the bronchial tracheal glands radiating both to the apices and bases, and considerable peribronchial infiltration. It is safe to make a diagnosis of bronchial gland adenitis in this case, but not safe to make a diagnosis of active bronchial gland tuberculosis. Such a case should be kept under observation, weight, temperature, and general reaction to daily life kept close watch of. In this case this was done in the O. P. D. after he left the hospital, and after a convalescence and careful watching of now over six months, he is in very much better condition, and from physical examination, signs of bronchial glands in his chest are considerably less.

No. 6631. M. R. Age 13. Two plates of this case give illustration of a case which undoubtedly started as bronchial gland adenitis and which has spread to a parenchymal involvement which is best seen in the right apex. Enlarged glands and peribronchial infiltration on both sides, radiating to bases and apices, with a marked focus in the right apex. This case has lately developed tuberculosis of the kidney. There can be very little question that the starting point in her present disseminated general tuberculous condition is primarily due to bronchial gland involvement.

No. —. A. T. This series of two plates illustrates findings in a child seven years old in a family in which the mother and father both have had tuberculosis, though are now supposed to be in the quiescent stage. Five other children, the youngest 18 months, the oldest 14 years. They all show varying degrees of bronchial gland involvement. This child was chosen because he is the middle child and gives the average of the family very well.

Physically he is somewhat below par, is running no temperature, going to school regularly and doing well, and except for the fact that he comes from a tuberculous family, would not probably have been sent in for complete medical examination. His physical examination showed nothing but moderate interscapular dullness, increased bronchophony down to the fifth dorsal interspace. His tuberculin was very strongly positive to both human and bovine. X-ray shows enlarged tracheal-bronchial glands radiating into both bases and apices with peribronchial infiltration. Such a case unquestionably should be treated as a tubercular case, even though he does not show any general symptoms that would indicate any active process going on at the present time. Unless this is done there is very little doubt that during adolescence, if not before, he would develop general pulmonary tuberculosis. At least no one can gainsay that this is the time for preventive treatment in his case, and such a case should be under the strictest observation and routine guidance.

No. 1168. P. B. This series of pictures taken from January to April shows another typical bronchial gland adenitis case which is unquestionably tubercular in origin. In this case it is probably a bovine infection. The boy is three years old, has always been well, active, and lived under the best hygienic conditions. He has not had certified milk to drink. There seems to be no other source of infection. He gives a strong tuberculin skin reaction, stronger for bovine than human, runs a constant temperature between 99° and 101°. During the last three months he has lost ten pounds in weight, has been having night sweats and become very irritable.

Physical examination shows a very well developed boy with slight signs of loss of weight and flabby musculature. Enlarged tonsils and adenoids with very slight interscapular dullness and very slightly increased bronchophony to the third dorsal interspace. This series of X-ray pictures shows how the glands progress during four months of active treatment. During this period his tonsils were removed. His temperature became very much less, and the last picture shows child after an at-

tack of whooping cough which apparently did not affect him as seriously as might have been expected.

A case like this must be kept under close observation and careful outdoor treatment given until there is no further loss in weight, and temperature becomes more constant and pulse less rapid.

*From Allergy, by C. E. Von Pirquet. Arch. of Int. Med., Vol. VII, 1911.

INDICATION FOR THE LABYRINTH OPERATION, WITH REPORT OF EIGHT CASES THAT WERE NOT OPERATED UPON.*

By CULLEN F. WELTY, M. D., San Francisco.

In this series of operated cases, my indications for operative procedure were based upon the Vienna school of otology, headed by Docent Neumann, Alexander, Frey, Barrany and Ruttin.

At this time, under certain conditions a labyrinth operation was recommended when the acoustic or static apparatus were intact; many operations were done in such cases and usually with good results. About two years ago the attitude seemed to change in regard to the operative indications and at present the entire labyrinth must be destroyed before the operation is indicated.

In my series of eight cases, a few had complete destruction of the labyrinth, and four had only the static labyrinth destroyed. In one case the horizontal canal was opened from the fistulae to the vestibule and the cochlea broken off; all the others had the complete Neumann operation. No cases of facial paralysis; all recovered. No other complications. It seems to me the non-operated cases assume more importance, because they were cases that should have been operated, were you to accept either classification for operative procedure.

Case I. Female; age 21 years. Had ordinary diseases of childhood. Had acute suppurative otitis following scarlet fever at the age of eight. The discharge continued uninterruptedly for two years. Adenoids were removed and drops used in the ear, which remained perfectly dry for one year. Since that time, the ear has discharged more or less. Examination: Weber in the good ear. Schwabach somewhat shortened. Rinne, right ear, positive. Slightly shortened bone conduction. Rinne, left ear, negative; considerably shortened bone conduction; very much shortened air conduction. Right ear, whisper 25 feet. Left ear, whisper on contact. Acoumeter on contact. Right ear apparently normal. Left ear, caries of the attic wall with a fissure extending into the same. Some granulations above this fissure with a tendency to bleed on manipulation with a probe.

January 19, 1905. Radical Operation. Closing by Korner flap. Posterior wound healed by primary union. On removing the periosteum from the mastoid the bone showed a dark blue color. This was produced by the carious necrotic mass of the mastoid cells. The outside shell of bone was more porous than under normal conditions. The hammer and incus were almost destroyed by caries. There was a fistula posteriorly and below the facial nerve. However, it was curetted as well as possible by the use of straight and curved curettes. I wish to direct particular attention to this particular lesion, as I consider it wholly responsible for the symptoms that will be recorded later. The wound was dressed every second or third day. The patient complained of so much dizziness, headache and pain on this side of the head that she remained in

*Read before the Pacific Coast Oto-Ophthalmological Society, Portland, July 1, 2 and 3, 1913.

the hospital for 30 days. I attribute some of the headache to a compound astigmatism which was partially relieved by the continuous use of her glasses. While in the recumbent position she was not dizzy. When she assumed the erect position she would become very dizzy and at one time she fell from her chair. This can be accounted for but in two ways; first, that of injury to the semi-circular canals at the time of operation; or second, to an infection which I believe most likely took place by the way of the fistula which I described before.

Twenty-four hours after operation she was reported by the nurse to be delirious. This happened two or three times in the course of as many days. Complained of headache and soreness about this side of the head, which gradually subsided. When she began to walk her gait was that of a person with a fractured pelvis. She is a highly sensitive, hysterical woman, and I attributed part of the cerebral symptoms to her mental condition. The eye background was perfectly normal.

March 27, 1905; the ear absolutely dry, hearing improved.

May, 1905; sero-pus began to discharge from the fistula and continued until September, 1905, at which time I again performed a curettement. This was treated antiseptically until November, 1905, when she was again discharged as cured. Since the recovery from her primary operation she has had no cerebral symptoms of any kind.

March, 1906; complains of intense headache over this side of the head and dizziness a great deal of the time. The whole of the temporal bone on this side was tender to pressure and the slightest percussion would elicit excruciating pain. At this time there was a serous discharge from this fistula, which in the course of two weeks disappeared entirely. The cerebral symptoms continued with acute exacerbations, at times so severe as to require morphine. Her pulse repeatedly reached 50, full and strong. She had some vomiting, which was probably due to morphine. Examination of the eye, negative; physical examination, negative. At repeated consultations operation was recommended by all but one physician, who maintained that it was due to a nervous manifestation.

May 15, 1906; patient entirely well; cerebral symptoms entirely gone.

Diagnosis; serous meningitis. Infection by way of the fistula to the semi-circular canals and the aqueductus vestibuli. This will explain the cerebral symptoms that followed the primary operation as well as the cerebral symptoms that followed in the later infection. During the first infection the cerebral symptoms were scarcely sufficient to warrant further operative procedure, because they seemed to improve almost daily after the second or third day. However, when we are confronted with cerebral symptoms later, and the only possible source of infection is by this fistulous communication, it must be admitted that it was by this route. Furthermore, the patient had an association of cerebral symptoms such as dizziness, headache and localized pain in the affected side, which should always lead you to suspect cerebral complications, especially when all the mastoid cells have been removed. If it is not to-day it will be considered in the near future, conservative surgery to open and explore.

My diagnosis prior to her recovery was different. At this time I thought she had extra-dural abscess or brain abscess, with a decided leaning for an extra-dural abscess of the posterior brain fossa, infection by way of the semi-circular canals and the aqueductus vestibuli. No doubt the infection traveled this route and was a non-bacterial origin. I wish also to call attention to the fact that the fistula which was discovered at the primary operation and which has apparently been responsible for the infection which followed, should have been destroyed entirely at the sacrifice of the facial nerve, to remove all possible source of cerebral

affections to follow. Or should we trust in Providence, as I did in this particular case, and almost lost my patient?

In this particular case the patient made a recovery without operative interference. This was good luck rather than good judgment on the part of the patient, and I am confident that such cases will not often repeat themselves. In conclusion will say that by early operation in cerebral affections you may cut short or eliminate entirely your source of infection, which on the other hand, if allowed to remain, has but one termination, and that is death, with but an occasional exception such as I have illustrated.

As you will note, this case was operated first in 1905. The history is exactly as I have reported the case at that time. To-day we put a different interpretation on the symptoms of which she complained. Following her first operation she had acute purulent inflammation of the labyrinth by way of the fistulous connection. Made recovery. Later she had an acute exacerbation of her then chronic suppurative labyrinthitis and made recovery. At present she has a discharge of pus from the same fistula, and more than likely will not be well until she has the necessary Neumann operation for complete destruction of the labyrinth.

This case dates back eight years; since then we have learned a great deal about labyrinth infection. Some three years ago she did not hear at all. Caloric reaction negative. However, she had no labyrinth symptoms; the fistula continues to discharge pus.

Case II. The patient, a woman aged 20, stenographer, had discharge from the ear since childhood and repeated attacks of facial erysipelas; also repeated attacks of vertigo for several years past.

Examination; no pain or sensitiveness on pressure or percussion; entire destruction of the membrum tympani; small granulations protruding from the attic. Whisper three inches. Weber to opposite ear (marked adhesive process in the other ear). Rinne, negative; CI, positive; C, negative; C4, positive; watch on bone, positive; vertigo, positive; tinnitus, positive; spontaneous nystagmus, negative; caloric reaction, positive; hearing seven-foot tube, whisper positive.

Operative findings; caries of the attic and antrum; dura uncovered the size of two thumb nails. Fistula of the oval window with a blackened margin about it, which demonstrates that it has existed for a long time; a good sized probe was introduced into the fistula. Neumann plastic, grafts in the usual manner and closed.

First day after operation everything satisfactory; second day some vertigo; third day, vertigo, nystagmus to the opposite side, vomited five times. Fourth day, dressing removed; not so much nystagmus, patient vomited twice. Grafts all adherent.

During the four days the patient had no fever; the vertigo and nystagmus disappeared gradually. The patient left the hospital in ten days; well in twenty-eight days.

Observations: My only careful examination of the patient was made nine months prior to operation. From the examination as made at that time the cochlea and canals were intact, so that a radical ear operation would not have been attended with risk to the patient's life; but when I found a fistula, and an old one at that, I felt sure there would be induced an acute exacerbation of the old labyrinth suppuration. However, the patient made an uninterrupted recovery. This patient should have had an operation on the labyrinth at the time of the ear operation or no operation at all.

I relate this case in detail to accentuate the importance of repeated examinations, should the case not be operated within a few days. At the time of examination the patient heard a whisper three inches. Had my labyrinth instruments been accessible I would have destroyed the labyrinth at once; as they were not, I concluded the operation with a

skin-graft. The patient made a good recovery, which can be attributed to good luck rather than to modern otology.

Case III. Female, age 12. Discharge of ear since infancy; frequent attacks of pain back of the ear; frequent attacks of vertigo. This last attack began three days ago. Acute exacerbation of the chronic suppurative otitis media; pain on whole side of head. Such vertigo that when she moved her head, would vomit. She said the pictures jumped on the wall.

Examination: Painful on this side of the head and especially so over the mastoid. Marked nystagmus to the opposite side and to the same side. Nystagmus of the third degree. Meatus swollen to such an extent could not get a clear picture of the membrane. Weber to the good ear. Schwabach short. Watch on bone negative. The hearing test was positive, but not properly made. By the introduction of cold water into the ear we thought the nystagmus was increased. Hot water did not seem to influence it in any way. The following morning a radical ear operation was done.

Operative findings: Large pneumatic mastoid; cholesteatoma; fistula of horizontal canal; facial uncovered just below fistula. Plastic operation completed.

The following day some additional fever. Beginning facial paralysis; headache; second day, semi-comatose; head retracted; neck stiff; meningitis; facial paralysis. Absolutely no hearing. No caloric reaction. Advised immediate labyrinth operation; was not allowed. Patient continued in this condition for a few days and then began to improve. The facial paralysis recovered entirely. The ear continued to discharge; no hearing, no caloric reaction. The rotary test later positive for a destroyed labyrinth. At my first examination I had misinterpreted the findings in regard to hearing and the caloric reaction. According to all the rules of otology this case should have died of a purulent meningitis. The patient has had no ear symptoms since she left the hospital, but the ear continues to discharge.

Case IV. Female, age 24. Acute otitis in both ears for two weeks past, following influenza. For the past four days has had fever of $103\frac{1}{2}^{\circ}$; marked vertigo, nausea and vomiting. Repeated incision of the drum membrane by family physician.

Examination by myself: Patient suffering great pain; temperature $102\frac{1}{2}^{\circ}$. Intense pain back of the head and especially back of either ear; marked nystagmus to either side; more to the right. Would vomit when attempted to move about in bed. Meatus in both sides swollen shut; pus present. I was compelled to return to the city for my instruments to do an immediate operation on both ears.

Operative findings: Large pneumatic mastoid on either side; dura uncovered on either side in my effort to remove all carious bone. Operation completed.

The following day the temperature dropped to about 100° ; not so much vertigo, had not vomited. The following day the temperature continued 101° ; dressing changed and a wet bichloride, 1-3000 substituted. After four days of this wet dressing the temperature was 99° and $99\frac{1}{2}^{\circ}$. Very little vertigo. The dressings were made of dry gauze, and in the course of ten days she was about her room. Discharge from the ears stopped in a very short time following the operation.

Three weeks following the operation the patient said to me that she did not hear; by the tuning fork I could demonstrate that she did not hear. This was verified by long speaking-tube, noise apparatus, etc. Caloric reaction negative. Was free from vertigo in three weeks; the ear continued to discharge for about ten weeks.

Undoubtedly this patient had a purulent labyrinthitis, and for some reason recovered in spite of her doctor. My reason for the neglect of a more thorough examination was because the apparatus

for examination was not about, and I felt that I could not put off operation to make a more thorough examination.

Case V. Male; age 17. Discharge from ears since three years of age following scarlet fever. This illness also destroyed his hearing. This case had the radical ear operation in 1907 on both ears, neither one of which recovered; continued to discharge pus. At this time I was not familiar with the findings of the labyrinth in chronic suppurative otitis in cases of deaf mutes.

Three years later had to have the labyrinth operation on the left ear because of such symptoms that called for immediate operation. This ear is now well and has remained so since the labyrinth operation. The right ear has discharged off and on, say probably four or five times a year for four or six weeks and by treatment with antiseptics he will recover. No hearing at all; caloric reaction positive.

You can readily understand that some of the cases were misinterpreted. Some were overlooked because of lack of the proper way of arriving at a definite conclusion, and others were not subjected to the proper examination because it was almost impossible to make it under existing conditions, and with all this the patients recovered, which is more astounding to me because I believe in the Vienna school of otology and their teachings. At the same time I am more skeptical than I was as to the serious nature of the labyrinth infection, and that meningitis usually goes by the route of the labyrinth.

On the other hand, only two of the six cases are free from discharge and may at any time have such a labyrinth affection or an infection of the meninges by way of the labyrinth as to cause most serious complications on short notice.

The four cases that had remnants of hearing or a slight reaction following the use of cold water are all cured and out of danger. This speaks for the more thorough operation.

I am of the opinion that the pendulum will swing back again and include as labyrinth operations such cases that have only remnants of hearing on the one side, and no caloric reaction or vice versa. So long as they remain in the present stage they occupy the same position in surgery as a chronic appendicitis.

Does it not seem obvious that it is rather a dangerous condition to allow? They do not get well of themselves and only progress to a more serious complication as time goes on.

The more I reason with myself the more I am convinced that surgical interference in the cases spoken of will yield the best good for the greatest number.

In regard to my reported cases, they should have died in the light of modern otology; I cannot reconcile myself to the fact that they did not. However, my leanings are strongly to the operative side.

THE INTRASPINOUS TREATMENT OF TABES. PRELIMINARY REPORT.*

By S. J. GARDNER, M. D., W. B. COFFEY, M. D. and W. T. CUMMINS, M. D., San Francisco.

The intraspinoous administration of auto-salvarsanized serum has been carried out on three tabetic cases at the Southern Pacific Hospital with the

* Read before the San Francisco County Medical Society, January 7, 1914.

period of study extending over six months. In general, the technic was that described by Swift and Ellis.** Salvarsan 0.6 gram was intravenously given and one hour afterward 40-50 cc. of blood were withdrawn. Left in the ice-chest over night, the serum was pipetted off, centrifugalized and the requisite amount of physiological salt solution added for the desired percentage. This was heated at 56° C. for one-half hour and inoculated within a period of twenty-four hours after the withdrawal of the blood. A funnel with short rubber tubing and interposed glass tubing were employed in the lumbar injection. Patients were kept in bed until the following day. The temperature, pulse and respiration were noted at two-hour intervals for forty-eight hours after the intravenous administration.

Case I. J. G., age 33 years. Painter, San Francisco. Admitted to hospital July 5, 1913. Family history negative. Denied luetic infection. His

Résumé: The patient has received 4.2 grams of salvarsan and seven intraspinal injections. He shows a clinical improvement with a return to a normal gait and to coordination of the upper extremities. He has gained in weight and feels very well. Serologically, he shows little, if any, improvement, the cerebrospinal fluid still showing a strongly positive Wassermann reaction and positive globulin content.

Case II. F. B. C., age 38 years. Conductor, Portland. Admitted to hospital August 21, 1913. Family history, negative. Denied luetic infection. About a year ago began to notice tingling sensations in the feet and a feeling that the soles of his feet were "dead." He began to note some difficulty in walking on account of frequent stumbling. "Lightning" pains developed in the legs. For past ten days stated that his nose felt "dead." No sensation during urination and defecation, but there was no incontinence. Examination: Well nourished adult. Pupils sluggish to light and accommodation. Enlargement of epitrochlear, inguinal and axillary lymph nodes. Patellar reflexes absent. Marked Romberg. Moderate incoordination

J. G.—Case I.

Date	WR		Pressure	Globulin		Cells	Type	Intraspinal treatment	Reactions
	BS	CSF		Noguchi	Nonne				
1913 July 3	—	++++						30 cc. 40% serum	Severe chill. Shooting pains in knees. Stiff neck.
" 17	—	++						30 cc. 40% serum	Generally not so severe. Severe pains over eyes. Some epigastric pain.
" 31	—	++						30 cc. 40% serum	Some epigastric pain.
Aug. 14	—	+						30 cc. 40% serum	Moderate pains.
" 28	—	+				10	Lymphocytes	30 cc. 40% serum	" "
Sept. 11	—	+				9	"	30 cc. 40% serum	" "
" 25	—	+	140 mm.	+	+	14	"	30 cc. 40% serum	" "
Nov. 7	+	+++	100 mm.	+	+	12	"	20 cc. 40% serum	" "
" 29	+	+++							
1914 Jan. 3	—	+++	175 mm.	+	+	44	"		

WR=Wassermann Reaction. BS=Blood Serum. CSF=Cerebrospinal Fluid.

complaint was difficulty in walking and vertigo. There had been no pains. Examination: Well developed adult. Pupils showed moderate reaction to light and accommodation. No blue line on gums. Marked Romberg and incoordination of upper and lower extremities. Patellar reflexes absent. No radial sclerosis. Blood pressure: systolic, 120 mm. Urine, normal.

After first three intraspinal injections patient stated that he was feeling much better and that he had less difficulty in walking. On September 25, after five injections it was noted that the patellar reflexes were absent and that the pupils still responded but moderately to light and accommodation. There was apparently the same degree of incoordination of the upper extremities. Gait was normal. On November 7, after six injections patient stated that he felt very well. Examination showed no further improvement. Inunctions of mercury were begun on January 8. Examination on January 9 showed no apparent incoordination of upper and lower extremities. Station very good. Tactile sensations normal.

tion of upper extremities. Gait typically tabetic. Ulnar anesthesia both arms. Blood pressure: systolic, 100 mm. Urine, normal.

After the fourth intraspinal injection there was some improvement in his gait. He said that he felt better. Two days after the fifth injection, October 23, he stated that he had more sensation in the feet and that he found walking somewhat easier. There was more sensation during urination and defecation. The anesthesia on the ulnar side of both arms had disappeared. Patellar reflexes could not be elicited and Romberg was marked. There was no increased reaction of pupils. Patient left for his home in Portland two days following the sixth injection (November 6) in the above condition. He has not been seen since that time but we have received letters from him stating that he is feeling pretty well and that his gait has improved.

Résumé: The patient has received 3.6 grams of salvarsan and six intraspinal injections. When last seen—three months ago, he had gained in weight, his gait had somewhat improved, his anes-

F. B. C.—Case II.

Date	WR		Pressure	Globulin		Cells	Type	Intraspinal treatment	Reactions.
	BS	CSF		Noguchi	Nonne				
1913 Aug. 23	—	+++						30 cc. 40% serum	Sharp shooting pains to feet.
" 26	—	++						30 cc. 40% serum	" " " "
Sept. 9	—	++						30 cc. 40% serum	" " " "
" 23	++	++	125 mm.	++	+	18	Lymphocytes	30 cc. 40% serum	Most severe.
Oct. 7	++	++	125 mm.	++	+	22	"	30 cc. 40% serum	Very mild.
" 21	—	++	180 mm.	+	+	22	"	30 cc. 40% serum	" "
Nov. 4	—	++	190 mm.	+	+	40	"	30 cc. 40% serum	Diarrhea after each "606."

Pupils moderately dilated and responded but little to light and accommodation. Patellar reflexes absent.

thesia of the arms had disappeared and the paresthesias of the feet were not so marked. He, therefore, showed some clinical improvement. An originally strongly positive fluid Wassermann was reduced to a doubtful (+) reaction while the chemical and cytological results showed no betterment. There appears to have been some serological improvement.

** Swift and Ellis. The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinal Injections. Arch. of Int. Med., 1913, XII, No. 3, p. 331.

M. C. G.—Case III.

Date	WR		Pressure	Globulin		Cells	Type	Intraspinal treatment	Reactions
1912	BS	CSF		Noguchi	Nonne				
Aug. 29 1913	—	—							
June 10	++	+++						30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
" 20	—	+++						12.5 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
July 3	—	+++						30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
" 17	+	+++						30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
" 31	—	+						30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
Aug. 14	—	++						30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
" 28	—	++		++	++	30	Lymphocytes	30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
Sept. 12	—	++	125 mm.	++	++	9	"	30 cc. 60% serum	Headache. Pains and stiffness in cervical regions and thighs. (severest.)
" 25	—	++	125 mm.	++	++	9	"		
Oct. 30	—	++	250 mm.	++	++	50	"	30 cc. 40% serum	Headache. Pains and stiffness in cervical regions and thighs.
Nov. 25	—	+++	250 mm.	++	++	50	"		
1914									
Jan. 13	—	+++	300 mm.	+	+	7	"		

Case III. M. C. G., age 55 years. Laborer, Sacramento. Admitted to hospital June 6, 1913. Family history negative. Alcohol and tobacco moderately. Genital chancre twenty-six years ago. Thermal treatment at Hot Springs, Ark., for two months and then a course of medicinal treatment for six weeks. No history of secondaries. Thirteen years ago fell upon pile of iron, striking abdomen, after which accident there were severe abdominal pains, some tenderness and more or less constipation, lasting to the present time. In August 1912 operated upon for a suspected gastric ulcer, which was not found. Temporary relief, however, was obtained. Present condition: Attacks of "lightning" pains in epigastrium radiating to the back. These appear every two or three days. Occasional sharp stabbing pains in middle and sides of chest. No girdle sensations. Numbness and needle-like pains in feet. Examination: Poorly nourished man. Pupils contracted and immobile. Thorax negative. Deep epigastric palpation elicited tenderness. Inguinal lymph nodes moderately enlarged. Patellar and tendo-achilles reflexes absent. Moderate incoördination of upper and lower extremities. Slight Romberg. Tactile anesthesia noted over upper, outer half of both thighs and lower two-thirds of both legs. There was everywhere a relative analgesia. No change noted in thermal sensations. Vision and eye-grounds normal. Blood pressure: systolic, 190 mm.—diastolic, 110 mm. Urine, normal. Feces, no occult blood.

A few days after the second intraspinal injection there appeared a slight left patellar reflex. The "lightning" epigastric pains became somewhat less severe after the first injection and then slightly but progressively decreased after the second, third and fourth injections. During this period the pupils gave slight response to light. The paresthesias of the feet persisted but walking seemed to improve. The patient stated that he was feeling better than he had felt for years. Urine, August 18 and September 26, normal.

On October 23, after seven intraspinal injections had been given it was noted that the epigastric pains persisted but were of a dull, aching character, present at night only and were always accompanied by nausea. Pupils contracted and immobile. Same degree of incoördination of upper and lower extremities and Romberg as at first examination. The areas of tactile anesthesia over thighs and legs had disappeared.

On October 31, and on alternate days thereafter, for twelve doses, mercacodol was given intramuscularly. The eighth intraspinal injection was given on November 25. On December 11 treatment with mercurous iodide in one-half grain doses was instituted but on January 5 a mixture

of mercuric chloride, Fowler's solution and potassium iodide was substituted. For the past three months he has suffered with a severe cold and has complained of general muscular, epigastric and inguinal pains.

Notes of January 12: For past two weeks the "lightning" epigastric and inguinal pains have been present though not so severe. At times he complains of considerable difficulty in walking, owing to the loss of feeling and needle-like pains in feet. Appetite very poor. Bowels constive and require routine purgation. Moderate Romberg and moderate incoördination of upper and lower extremities. Pupils markedly contracted and unresponsive to light and accommodation. Patellar and tendo-achilles reflexes absent. Tactile and thermal sensations normal. On January 23 a left patellar reflex was elicited.

Résumé: The patient has received 4.8 grams of salvarsan and eight intraspinal injections, twelve mercacodol treatments, followed by mercurous iodide for a period of a little over three weeks. Some improvement has been noted in the amelioration of the pains, the disappearance of the areas of tactile anesthesia and the reappearance of the patellar reflex. Serologically, there has been no improvement.

General Résumé: Case I presented symptoms of early tabes, while Cases II and III were more advanced. Case I has shown decided clinical improvement; Case II, moderate improvement; Case III, slight improvement. Serologically, Cases I and III have shown no improvement, while Case II has shown some improvement from the Wassermann but none from the globulin nor cytologic viewpoints. The resistance to medication as manifested by the examinations of the cerebrospinal fluids may be the expression of insufficient intraspinal treatment or of the necessity for vigorous mercurial treatment with or supplementing the salvarsan medication. Sufficient symptomatic improvement has been experienced as to justify our continuation of this method of tabetic treatment.

Note: April 27, 1914. Case I. For past three months intermittently he has been getting inunctions of mercury. He feels very well. His only symptoms are rather rigid pupils, absent patellar reflexes and obstinate constipation.

February 25, 1914. Wassermann's blood serum — and cerebrospinal fluid ++++. Pressure 150 mm. Noguchi +— and Nonne +. Cells 17 per cm. Lymphocytes.

April 11, 1914. Wassermann blood serum —.

Case II. He had received no medication since November 7. Considerable improvement is noted especially as to gait. There is still some numbness in feet and he complains of shooting pains in the right hypochondrium. Incoordination of the upper extremities is not so marked. Intraspinous treatment on April 9 of 30 cc. 45% serum. After the intravenous as well as the intraspinal inoculation, he suffered the most severe reaction of the series. Severe cramps in the thighs and legs predominated. April 7, Wassermann blood serum — and cerebrospinal fluid +. Fluid removed at time of intraspinal injection, Wassermann —.

Case III. February 17, Wassermann blood serum ++ and cerebrospinal fluid +++. Pressure 100 mm. April 20, he returned to hospital stating that he feels very well and has gained 20 pounds. His left patellar reflex is active and there is a slight response on the right side. There is but little incoordination of the upper and lower extremities. There is no pupillary improvement.

Southern Pacific Hospital.

UTERINE REPLACEMENT; WITH PARTICULAR ATTENTION TO THE BUTEAU SUSPENSION.*

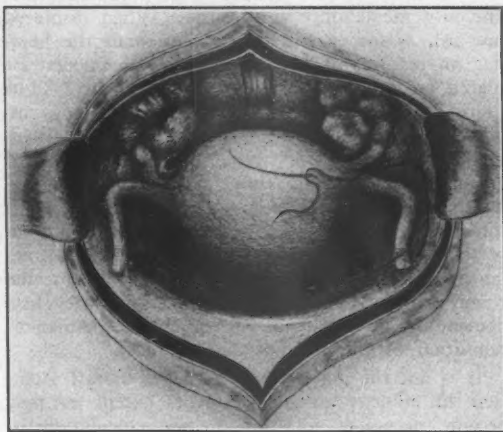
By CHARLES A. DUKES, M. D., Oakland.

I have no apology to make in presenting to you the subject of uterine replacement, knowing that I am to present for your consideration a method that is new in its application, and has proved efficient in a large number of cases. I also wish to make clear that I do not intend the discussion of uterine fixation. In a clinical period covering several years in the Samuel Merritt Hospital, I have used the various methods of uterine replacement that are in vogue, and feel that I may make a fair comparison of the more common ones.

In September 1912, Dr. S. H. Buteau presented before the twenty-fifth meeting of the American Association of Obstetricians and Gynecologists, held at Toledo, Ohio, a method for the correction of retro-displacements that has proven in the hands of us who have used it, a very desirable procedure. Presenting the reason for his method of treatment, he says: "It seems to me that only during the last few years have surgeons begun to appreciate keenly the fact that the so-called round ligaments are muscular in structure and in function, and that they merit the same consideration and the same treatment when they are left overstrained, as do any other muscles of the body under similar conditions.

"This idea has found expression in modifying

the underlying principles of the technic of but few operations that are practiced at the present



The Buteau Operation—1.

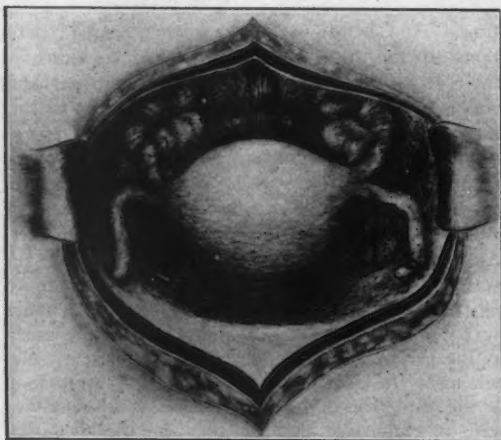
time. And before we can evolve accepted operations of the future, we must learn to think of these structures as muscles with duties to perform, and a good start could be made at once by calling them muscles. No one ligament, or muscle, can normally exercise its seemingly special function of keeping the uterus within its certain range of position without the assistance of all the other muscles. Any normal independent function exercised by a given muscle is dependent upon the normal co-ordination of the others. The plan of this natural co-ordination is interrupted at once by pathology or hereditary defects anywhere within the pelvis. Just as long as each of the muscles can meet the demands made upon it, just so long is the integrity of all secure, and no longer. I wish to emphasize the fact that in every acquired malposition of the uterus, of whatever nature, not only one but all the ligaments are concerned, as are all concerned when in normal position. It must follow that in correction of mal-position by the surgeon, not only one but all the ligaments must receive his attention."

Most all of the facts enumerated have been overlooked in most of the operations that have been suggested for the correction of misplacements. The Alexander operation shortens and still further destroys the muscular activity of the round ligaments. The Baldy operation, in drawing the round ligaments back of the uterus, and underneath the ovarian ligament, fastening it posterior to the uterus for the purpose of suspending it, while correcting the position overlooks the musculature of the round ligaments. He has also instituted a principle that enters into many of the operations,—namely to shorten the broad ligament by folding it upon itself. The Wiley and the Mann shorten the round ligament, but do nothing to increase its activity. The Dudley, while shortening the round ligament, also shortens the broad ligament, which probably gives it success. Coffey of Portland meets success by short-

* Read at the Forty-fourth Annual Meeting of the Medical Society, State of California, Santa Barbara, April, 1914.

ening the broad ligament, which is the stay or the main support of the uterus. Reed says: "In the normally poised uterus, the round ligaments are only incidentally suspensory. When displaced upward, as for example by distention of the bladder or rectum, or both, the round ligaments are placed on a tension, and limit the mobility. The uterus cannot become retro-displaced to any important degree without placing the round ligaments in a state of tension; and in cases of extreme retro-flexion, they may become permanently elongated. The broad ligament, the most important structure in maintaining the normal poise of the uterus, also becomes permanently relaxed. These pathologic changes point to the round and broad ligaments as the structures first demanding attention in perfecting the permanent reposition of the retro-displaced uterus."

It is not the purpose of this paper to call attention to etiology of displacement, except as may become necessary for the further elucidation of this operation.



The Buteau Operation—2.

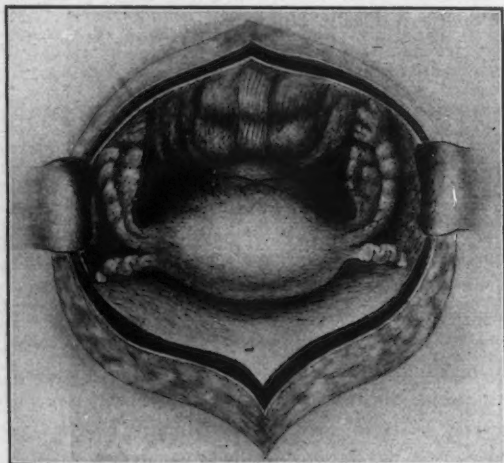
As Dr. Buteau has told you in his paper, his attention was first called to the methods that we will speak of later, by accident. A case was brought to him for further operation who had been operated on for double inguinal hernia. The patient's abdomen was opened in median line, and it was found that the round ligaments had been completely severed, the uterus had dropped back, and the round ligaments retracted to the uterus. To make the correction of this condition, he used silk, dipping into the fascia just above the inguinal canal, dropping down, picking up the broad ligament, and retracted end of the round ligament, and fastening it to the fascia and peritoneum, then in and out beneath the round ligament over to the uterus, dipping down beneath the ligament of the ovary and retracting it posterior to the fundus of the uterus, coming over from the opposite side in the same way and tying them together in median line.

Several months later this patient was married and became pregnant, bore a healthy child in a normal manner, and a year later when examined,

the uterus was found to have resumed its normal position as before the accident occurred in cutting the round ligament.

Following this idea, because of the failure of a number of the various operations that have just been illustrated, various suture materials were tried for the purpose of maintaining the uterus in a normal position, acting as artificial ligaments until the natural ligaments have by rest regained their tone sufficiently to functionate in a normal manner. It has been found by experiment that kangaroo tendon will last 60 to 90 days,—hence this material has been adopted, and by the time of its absorption the ligaments will have regained their normal condition and function and hence the uterus itself will not fall back in the position for which the correction was made.

The technic of the operation is simple,—using a full curved non-cutting needle with an eye that will not cut the tissues; the fascia is grasped above the internal ring on the anterior abdominal



The Buteau Operation—3.

wall, avoiding the deep epigastric and femoral vessels which can be readily felt; a slack knot is tied and the needle is carried parallel with the round ligament just beneath its serous coat through the broad ligament over to the uterus, then down under the ovarian ligament into the fundus, emerging just short of the median line.

Proceeding in the same manner from the opposite side and tying, this puckers the round and broad ligaments and holds the uterus slightly anteverted. The body of the uterus is now in its correct axis, relieving the tension of the uterosacral ligaments as well as the round and broad ligaments and this condition will remain, as has been stated, for 60 to 90 days.

At the Samuel Merritt Hospital we have over fifty cases on record, and of all those we could keep under observation there have been no failures. It has only been possible to open the abdomen in one case, and that was four months after operation; in this case complete restoration of the round ligaments had taken place.

BUTTERMILK AND GREENS TREATMENT OF THREE CASES OF GRAVE SECONDARY ANEMIA.*

By JOSEPHINE JACKSON, M. D., Pasadena.

In the *Journal of the A. M. A.*, March 9, 1907, is an article entitled "Turnip Top Treatment of Chronic Diarrhea and Amoebic Dysentery," by Cunningham Wilson, M. D., and H. E. Pressly, M. D., Birmingham, Ala.

A mental note made at the time was recalled in June, 1910, when a case of secondary anemia with diarrhea, presented itself for treatment. Assuming that the blood destruction was due to absorption of the toxins of inimical bacteria present in the intestinal tract, and leaning toward Metchnikoff's theory of the action of lactic acid bacteria on the intestinal flora, a dietetic treatment was instituted with wholly satisfactory results.

This exclusive diet was as follows: Buttermilk made from tablets containing lactic acid bacteria, quarts $2\frac{1}{2}$ daily, in five doses; turnip top greens, ounces 4-6, three times daily; these were sometimes replaced by spinach. Dilute hydrochloric acid three times daily.

During the first two weeks, attacks of diarrhea were treated by the use of a two-quart enema of normal salt solution containing one-half dram of tannic acid. At the end of three weeks the patient was required to eat three full meals of regular table fare, in addition to the buttermilk and greens which latter were given only once a day. Some six weeks later, or after about three months of dieting, the patient returned to a milk and meat-free diet, which had been the habit of her lifetime.

Two additional cases treated in the same manner have given satisfactory results.

Case I. Miss M. L., age 55. Weight 110 lbs. Illness dating from 1904, when great loss of strength, shortness of breath and hemorrhages from the womb rendered her incapable of any but the slightest exertion. A careful clinical examination made on June 6, 1910, taken in conjunction with the history enabled one to exclude as etiologic factors, malaria, syphilis, malignant growths, unicariasis and hemorrhage. (The uterine hemorrhages had ceased several years previously.) Liver and spleen were palpable, the right lobe of the former extending a hand's breadth below the costal border, but the surface was smooth, and the consistency normal. The colon was visible throughout its extent, distended with gas. Stools numbered three to six daily, were of the consistency of paint, and light brown in color.

Blood examinations. Dr. Ethel L. Leonard, Los Angeles, June 6, 1910:

Hemoglobin 60%. Red cells 3,720,000.

Poikilocytosis marked. Polychromatophilia slight. No nucleated red cells. Other features negative.

July 12:

Hgb. 50%. Red cells 3,240,000.

September 22:

Hgb. 80%. Red cells 4,400,000.

The patient now weighed 121 lbs.

Examinations of stools had shown a gas-producing bacillus which was not identified.

In a few months the patient undertook a difficult work, and has continued up to the present date strong and free from all symptoms.

Case II. Mr. O. S., age 66. Weight 155 lbs. Ill for two years. Had been treated for diabetes and for nephritis. Complained of marked shortness of breath, failing strength, loss of appetite, numbness in hands and feet, and for a short time previously, of diarrhea. The urine was found to be normal. Physical examination showed viscera to be normal; no evidence of malignant growth. Color of skin a bronze green. No treatment except diet of buttermilk and greens for three weeks; an occasional addition to diet of grape fruit, oranges, lettuce, green onions, green peas. Dil. hydrochloric acid 15 drops after meals. After three weeks, full table diet in addition to buttermilk and greens.

Blood examination. Dr. Carl Parker, Pasadena.

Oct. 15, 1913:

Hgb. 45%. Red blood cells 2,640,000; no nucleated reds.

Oct. 25:

Hgb. 70%.

Nov. 8:

Hgb. 80%. Red blood cells 3,715,000.

Dec. 11:

Hgb. 85%. Red blood cells 4,550,000.

Is at present in most vigorous health and strength.

Case III. Mrs. H. M. L., age 73 years. Emaciated. Color lemon yellow; face puffy. Ill one and one-half years; bedfast for four months because of weakness. Appetite poor. Sweating a marked feature of the disease. Great distress from numbness of hands and feet. Mind often disturbed with the delusion of being away from home. Examination of urine showed excess of indican and pus cells microscopically. Heart normal; liver and spleen normal in size upon auscultatory percussion. The right kidney lies entirely below costal border, is enlarged and irregular in contour. Attached to it by a pedicle 2-3 inches in length is a mass less in size than the normal kidney, oval, smooth and slightly tender to the touch. No enlarged glands in the left supra-clavicular space, as might have obtained in malignant disease of the abdominal viscera. Outline of large bowel can be traced throughout its course, through the thin lax abdominal walls. Transverse colon extends from midway below the umbilicus sharply upward to splenic flexure. Sigmoid and cecum in usual positions. All markedly distended with gas. Treatment up to March 10 had been hematonics, purgatives and buttermilk in addition to generous diet.

Blood examinations. Dr. Stanley P. Black, Pasadena.

Dec. 12, 1913:

Hgb. 45%. Red blood cells 1,480,000.

March 3, 1914:

Hgb. 55%. Red blood cells 1,240,000.

White blood cells 5,050.

Treatment instituted March 10, 1914. Exclusive diet of buttermilk, turnip top greens and spinach. Dil. hydrochloric acid fifteen drops three times daily. No other medicine except heroin gr. 1-12 as needed for marked restlessness. During ten days there were three attacks of diarrhea, evidently due only to some factor that stimulated peristalsis, and not due to fermentation or putrefaction. It was accompanied by very little discomfort, and only a slight amount of mucus. The treatment of this symptom was high enemas of normal salt solution with a half dram of tannic acid, followed in two hours by one-half ounce of castor oil, and this in three hours by a one grain opium suppository. Diet during the diarrheal attacks was limited to six ounces of boiled milk every two and one-half hours.

Blood examination. Dr. Black.

March 24:

Hgb. 65%. Red blood cells 2,625,000.

White blood cells 11,000.

* Read at the Forty-fourth Annual Meeting of the Medical Society, State of California, Santa Barbara, April, 1914.

April 13:

Hgb. 78%. Red blood cells 3,724,000.

White blood cells 6,000.

Urine analyses varied but little except in amounts of indican, and in the finding microscopically of few or many pus cells. Never more than a trace of albumen. The degree of distension of the colon seemed to bear some relation to the amount of indican. However, the absorption of pus from a septic kidney must be considered as a factor in causing indicanuria and the profuse sweating, which has not abated in any appreciable degree. The probability of a possibly malignant surgical kidney is being considered.

THE DANGERS OF VAGINAL EXAMINATIONS DURING LABOR.*

By AUSTIN MILLER, M. D., Porterville.

"... in my own family I had rather that those I esteemed the most should be delivered unaided, in a stable, by the manger side, than that they should receive the best help, in the fairest apartment, but exposed to the vapors of this pitiless disease." Dr. Blundell, quoted by Oliver Wendell Holmes.

The subject matter of this paper is doubtless an old story but the occasional slighting of aseptic technic in obstetrics is justification for this review. Of course the knowledge of military sanitation was highly developed by western hygienists, but its practical enforcement awaited appreciation until it was efficiently applied by the Japanese. The principles of rural, school and municipal sanitation are well known, but the application of the knowledge is sadly lacking. And so the bacteriology of puerperal fever has been extensively investigated and very thoroughly worked out, but such knowledge is not so universally applied as might be desired.

In 1847 Semmelweiss investigated the frightful mortality attending labor in the Vienna Lying-in Hospital and concluded that the disease was a wound infection, and that it was due to the introduction of septic material by the examining finger. He advocated the use of chlorine water as a disinfectant for the hands of the attendants and as a result the mortality dropped from more than ten per cent. to about one per cent. The disease was a pestilence in maternity hospitals and but little less in private practice. Holmes's first paper appeared in 1843. The discoveries of the true nature of the malady were derided, however, and not appreciated nor given credence until Lister's revolutionary discovery popularized the antiseptic treatment of wounds.

The extensive bacteriological studies of the flora of the genital canal carried out in this country by Williams and abroad by Leopold, Ahlfeld and others have shown in brief that pathogenic bacteria are normal habitants of the vulva and lower vagina but are displaced by non-pathogenic micro-organisms in the upper part of the vagina. The

uterine cavity is probably free from bacteria normally.

In 1890 Leopold and others advocated the advantages of external examinations in labor and showed the dangers of internal examinations. It was further advised that in normal deliveries no internal examinations were required. In spite of this advice nearly a quarter of a century old it would seem that the greatest activity of some attendants at the time of confinement consists of frequent digital exploration of the birth canal. The point that the danger of infection lies in carrying pathogenic bacteria from the vulva to the uterus by internal manipulations seems to be too commonly overlooked. Indeed it is advised in a recent number of one of the best medical journals that to prevent puerperal infection the nose of the patient should be gently sprayed with an alkaline or mild antiseptic solution and that the mouth and throat should be washed with some mild antiseptic mouth-wash and the teeth thoroughly cleansed and then a vaginal examination may perhaps be made. This seems about equivalent to advising a military surgeon to spray the nose of a wounded soldier, to give him a gargle and then to proceed to probe his wound. One of the most beneficent advances of modern surgery is the teaching that bullet wounds must not be probed.

The danger then of internal examination is the danger of puerperal infection. In spite of careful disinfection of the hands and in spite of sterile rubber gloves there is ever the possibility of carrying pathogenic micro-organisms on the examining finger from the external parts into territory normally free from infectious flora. Moreover, the internal examination adds but little to the very complete diagnostic information obtained by the external examination of the abdomen. By internal touch it is often impossible to differentiate between the fontanelles and indeed the vertex and breech are frequently confused. This confusion is the more readily brought about by the formation of the caput succedaneum which may make it impossible to recognize the diagnostic landmarks. The degree of cervical dilation is about the only real information obtained. Such data as may be obtained at the expense of vaginal and uterine asepsis may be safely foregone.

By external palpation the presentation and position of the child is determined, as well as the degree of progress of the presenting part. If it seems as a result of the external examination and impeded progress of labor that internal examination and manipulation must be undertaken the procedure should be marked by the same aseptic technic that accompanies a surgical operation. The external genitals should be disinfected and the pubic hair cut or preferably shaved. The disinfected hands should wear rubber gloves that have been boiled. The labia should be separated and the examining finger introduced directly into the vagina without coming in contact with any external part. Remember that if Caesarean section must be done the prognosis is shadowed by every vaginal examination.

Antepartum douches and douches during the

* Read at the Forty-fourth Annual Meeting of the Medical Society, State of California, Santa Barbara, April, 1914.

peurperium are to be avoided as dangerous for the same reasons that make internal palpation dangerous. Moreover, they are without antiseptic efficiency and the washing away of the natural mucous secretion is undesirable.

It is strange that sometimes the woman in labor will think that she is being neglected if she does not receive the customary internal examination and she may express the criticism that she is not being helped with her labor. Thus firmly are ingrained the practices of the ancients in patient as well as doctor. It seems trite to say that the patient's asking that a dangerous maneuver be performed is no excuse for doing it. In fact the chief duty of the physician in attendance at the time of labor is to prevent meddling interference and to be ready for any unfavorable emergency. A masterful inactivity should mark his conduct. Prophylaxis is the best treatment of puerperal fever.

As we should know that bullet wounds are not to be probed, that a paralyzed bladder should not be catheterized but be permitted to leak, and as we should know that in the open treatment of fractures the fingers must be kept out of the wound, so must we recognize that internal examinations during labor must be avoided.

A CRUSADE AGAINST MEDICAL LICENSURE.

The attention of members of the State Society is urgently called to an initiative petition which recently circulated through the state and for which the necessary number of signatures was obtained to place the same on the ballot for the coming election. Many individuals signed this petition because the facts were misrepresented to them, and they did not realize that they were helping a proposed law that would have the effect of practically doing away with all regulation of the practice of medicine. The proposed act would repeal all other medical practice acts, and it would immediately license anyone who has been in the actual practice "of any drugless system for six months prior to the taking effect of this act," merely upon the payment of a fee of twenty-five dollars. It would provide that every licentiate shall have "the same rights and privileges granted to other persons now practicing any system of treating sick or afflicted human beings under any of the laws of the State of California," and would legalize birth and death certificates signed by the same. All licentiates would be permitted to use the title "doctor." On the Board of Examiners (nine members) there would be appointed representatives of at least seven "schools" of drugless healing.

The present Medical Practice Act, while not perfect, has proven to be better than many thought it would be, and with a few minor changes to be proposed before the coming legislature, it can be made a very good law. Some of the so-called defects might have been taken advantage of by those interested in lowering standards had not the Board of Medical Examiners seen that the law was properly interpreted and enforced in the interest of the great public for whose protection it

was framed. The present law provided for a period during which all medical teaching institutions could adjust themselves to meet the higher standards required. This period has about passed and now the law automatically increases the requirements to be met by ALL applicants to take the examinations.

After this year every student before beginning his work in a medical college, will be required to present credentials showing that (in addition to a standard high school education) "he has completed a course which includes at least one year of work, of college grade, in each of the subjects of physics, chemistry and biology." Drugless practitioner applicants who have not completed this additional work, and who have not made up the extra hours in a medical college approved by the Board of Medical Examiners, cannot take the examination for physician and surgeon licenses. The present law does away with all sectarian medicine, and divides all practitioners into two classes—"physicians and surgeons," and "drugless practitioners." The latter are definitely limited to the treatment of "diseases, injuries, deformities or other physical or mental conditions without the use of drugs, or what are known as medicinal preparations, and without in any manner severing or penetrating any of the tissues of human beings, except the severing of the umbilical cord."

Pre-medical educational standards for all applicants are definitely outlined and no applicant for either class of certificate can take the examinations, unless he is a graduate of a school or schools approved by the Board. The present Board of Medical Examiners has a College Investigating Committee, and has officially refused to extend its approval to certain "schools" which have not given proper or sufficient medical training.

The Chiropractics and allied quacks as well as many other illegal practitioners who have felt the strong force of the law recently, are behind this latest movement to practically do away with all regulation of the practice of medicine. That hypocritical friend of the public, "The League of Medical Freedom" (?) is deeply interested, and, it is suspected that it is one of the principal agents behind this movement to license anyone and everyone who desires to assume the numerous grave responsibilities that come to every physician, regardless of whether he is morally or mentally capable of doing so. A large fund has been collected for the purpose of helping along this pernicious initiative law and already the allied quacks have begun their newspaper campaign which promises to be very extensive. The real character of a movement usually can be determined by inquiry into what forces are behind it. In this case very little investigation will reveal a small army of "Ethiopians in the wood pile."

The Medical Practice Act and the Board of Medical Examiners constitute the only barrier protecting the public from the thousands "who seek the right to treat human ailments, including the incompetent or imperfectly trained product of low grade medical schools." (Colwell.) As usual, the incompetents, the quacks, and others interested in doing away with all medical regulation are assailing the law, and the regular profession, through whose efforts every uplift in standards has ever been accomplished, are interested in the protection of the public, by compelling all licentiates to meet higher educational and moral requirements. Standards all over the country are being raised with the result that better physicians are being produced. Will California keep up in the procession, or will she be the only State to take a backward step? The regular profession can easily save the situation by properly educating the public on this question. Inform your friends and patients as to the real character of the proposed initiative act.



THE HARMLESS LITTLE FLY.

The doctors have it in for me—
I'm sure I don't know why.
I'm just a cunning playful thing,
A harmless little fly.

They lam me with a swatter,
They trap me in a cage,
They mire me in molasses
Till I die in helpless rage.

They hold conventions on me—
Read essays long and wise—
And make such asses of themselves—
'Bout harmless little flies!

It's true I'm none too careful
As to where I place my feet.
It's true I'm rather thoughtless
About the things I eat.

I dote on garbage pudding.
I could live on stable stew.
I love to swim in sewers,
And in the cream-jug, too.

The typhoid germ counts me his friend,
Likewise my dear T. B.
They find it hard to get around,
They say, except for me.

I meet them at the sewer's mouth,
With other bugs galore.
They swarm upon my back and legs,
And then I blithely soar.

Full straight unto the nursery
I wing my joyous way.
The door's ajar; the nurse is out
(This is my lucky day!)

The baby sleeps. What fun to crawl
Upon its rosy lips!
And from its milk-cups standing by
I steal such luscious sips.

And so thro' all the sunny day—
You'd wonder if you knew
The many pleasant little stunts
One little fly can do.

But still the doctors lay for me—
I'm sure I don't know why.
The horrid, cruel, hateful brutes,—
A harmless little fly!

—W. P. Millspaugh.

BOOK REVIEWS

The Clinical History in Outline. By Paul G. Wooley. 53 Pages. Published by C. V. Mosby Co., St. Louis. Price, \$1.00.

We have in this book a short outline to be followed in the taking of histories and the making of physical examinations, such as is usually supplied students entering upon their clinical work; a slightly fuller outline to be followed in investigating the acute infectious diseases; and finally a list of symptoms with the conditions commonly giving rise to these individual symptoms. The student should find it helpful in his first few weeks of clinical work, but should very soon outgrow it. For the physician with any clinical training, there are many standard works which more thoroughly cover the ground. W. W. B.

Anatomy and Physiology. A Textbook for Nurses.

By John Forsyth Little, M. D., Assistant Demonstrator of Anatomy, Jefferson Medical College, Philadelphia. Illustrated with 149 Engravings and 4 Plates. Lea & Febiger, Philadelphia and New York. 1914.

This is a condensed anatomy and physiology written in clear, concise style, well illustrated and well printed. The heavy type scattered through the pages and not only at the beginning of paragraphs permits of rapid reference on any subject. The questions at the end of each chapter are also an aid to study. The anatomy is more complete than usual in a nurses' course of study and this adds to the value of the book. In the past the very cutting out of much material made the text difficult to grasp. Perhaps this book might be made a little more attractive and readable if each sentence were not weighed to contain no extra word. As a reference book, this system is ideal—as a student's book a trifle difficult.

M. I. JUDELL.

Infant Feeding. By Clifford G. Grulec, A. M., M. D., Assistant Professor of Pediatrics at Rush Medical College, Chief of Pediatric Staff, Cook County Hospital. Second edition, thoroughly revised. Octavo of 314 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1914. Cloth, \$3.00 net.

The author of this book has approached a very difficult subject, that of infant feeding in the proper way. He has taken it up in the only practical way, that of considering the question from the anatomical, physiological, bacteriological and metabolic standpoint. His viewpoint is essentially German and is a good presentation of the modern German school. He follows Finkelstein's classification of the disturbances of nutrition fairly closely, though we are glad to note he is not quite as rigid in his acceptance of this classification.

The closing chapters on Nutrition in Other Conditions are not as full as one would expect from the way he has handled the subject in the earlier chapters. For those who want to get acquainted with the German ideas in feeding this book will be found to be a very convenient way to do so, as his presentation of their views is very good. His illustrations are not up to the contents of the book. This book should be studied by all who are interested in the problem of infant feeding.

W. P. L.

The Diseases of Children. By Henry Enos Tuley, M. D., Jate Professor of Obstetrics, University of Louisville, Medical Department: Visiting Physician Masonic Widows' and Orphans' Home, Louisville, Ky.; Secretary of the Mississippi Valley Medical Association; Ex-Secretary and Ex-Chairman of the Section on Diseases of Children, American Medical Association; Ex-President American Association

Medical Milk Commission, etc. With 106 Engravings and three Colored Plates. Second Revised Edition. St. Louis: C. V. Mosby Company. 1914.

The second edition of Dr. Tuley's book is a considerable improvement over the first edition as far as typographical errors, corrections and make-up go. There are few illustrations and the ones that are given are not of as much value as the illustrations in such a book might be.

We are sorry to see that he still clings to the old classification of diseases of the intestinal tract when so much has been done since his first edition in putting the nutritional conditions of infancy on a more scientific basis by more exact studies in metabolism. We are glad to see that the suggested standards and methods for the production of certified milk as adopted by the American Society of Medical Milk Commissioners have been reproduced in full in the appendix.

The book as a whole does not add anything distinctive to a number of other books on the diseases of children at present on the market.

W. P. L.

The Principles of Pathologic Histology. By Frank B. Mallory, M. D., Associate Professor of Pathology, Harvard Medical School and Pathologist to the Boston City Hospital. Octavo of 677 pages, with 497 figures containing 683 illustrations, 124 in colors. Philadelphia and London: W. B. Saunders Company. 1914. Cloth, \$5.50 net.

The book by Mallory fills a distinctive place among present-day textbooks. He who searches for an elaborate description of pathological processes with extensive bibliographies will be disappointed, for such is neither the purpose nor the scope of this work. But one who wishes a clear, concise and accurate account of the most important pathological processes will find it in this book.

The descriptions and conclusions are a bit didactic and rigid at times perhaps, but whatever the book loses on this score it gains in presenting fundamental and salient points. To one who is often lost in the mazes of contradictory opinions and descriptions often found in other books, will turn to it with a sigh of relief as embodying the views of a master with a long and ripe experience. Worthy of especial note are the excellent drawings and microphotographs that illustrate the book.

R. H. M.

The Practice of Pediatrics. By Charles Gilmore Kerley, M. D., Professor of Diseases of Children, New York Polytechnic Medical School and Hospital. Octavo of 878 pages, 139 illustrations. Philadelphia and London: W. B. Saunders Company. 1914. Cloth, \$6.00 net; half morocco, \$7.50 net.

This book is an enlarged and revised edition of Dr. Kerley's earlier work, "The Treatment of Diseases of Children." It is especially strong in treatment, a particular in which so many books are woefully deficient. No one can read it without getting many valuable points even if one is not entirely in sympathy with his recommendations.

The book is not well put together for study and is not encyclopedic in character. It is, however, one of the best books on children's diseases for the general practitioner who wishes to find out how Dr. Kerley has treated children's diseases in his own large and successful practice. The book loses in this very fact, since he does not attempt to say whether his experience agrees with that of the pediatricists of the world.

Among some of the most valuable chapters are those on Gymnastic Therapeutics, and General Therapeutic Measures. His chapters on bronchitis and cyclic vomiting, asthma, urticaria and tetany

are especially well written and up to date. However, we are sorry to see that Dr. Kerley still adheres to the old method of feeding and dismisses the calorimetric method as of little value. He says very little or nothing as to the role of salts in infant metabolism.

On the whole the book is one of the best there is. His illustrations are good and the histories of cases from his own large experience are used to advantage. The book, we venture to say, will have a large sale on account of its practical value.

W. P. L.

The Anatomic Histological Processes of Bright's Disease and Their Relation to the Functional Changes. By Horst Oertel. W. B. Saunders Co., Philadelphia. 1910.

In the first place, the book is an attractive octavo volume of some two hundred pages printed with large clear type on good paper and with numerous excellent illustrations, many of them colored. The appearance of a publication by this author suffices to arrest the interest of the medical reader, and his directness of style and clearness of diction make the reading of what might otherwise be a rather heavy treatise attractive. He deals with the pathology of the kidney both from the standpoint of the clinician and of the pathologist, and argues for a new classification of kidney diseases based upon advances of the knowledge of the subject within recent years. This classification has the advantage of being simple and brief, and while it adheres rationally to the anatomic changes, is not inconsistent with the conclusion of the clinician.

It has been recognized for some time that the present classification of renal inflammations is inadequate; it is very possible that his classification may meet the demands now made. At any rate, there is no doubt that it is an improvement over the past.

The book is a series of five lectures delivered at the Russell Sage Institute of Pathology at the City Hospital, New York. The first lecture covers the history of research into Bright's disease delightfully, and brings the subject down to the discussion of modern pathology of the kidney, and outlines his proposed classification which, however, must be read to do it justice, as the enumeration of a few terms here would only be misleading. The structure and function of the normal kidney are reviewed and the succeeding pages given up to a careful consideration of the several types of kidney changes.

Of especial interest is his logical differentiation between productive nephritis (chronic interstitial nephritis) and senile kidney. In short, the subject is well and convincingly treated, and the book as a whole is an epitome of our present knowledge of kidney inflammations.

G. E. E.

SOCIETY REPORT

PROCEEDINGS OF THE SAN FRANCISCO COUNTY MEDICAL SOCIETY.

At a special meeting of the Society held June 9th, the meeting having been called at the request of ten members, the fee bill presented by the insurance companies and the Industrial Accident Commission, the adoption of which had been recommended to the county societies by the State Society, was again discussed. The following resolution was presented and unanimously carried:

Resolved, That it be the sense of this meeting that this Society refuse to accept the proposed Industrial Accident Insurance Fee Bill, and call upon the Board of Directors to reject it.

It was also moved and carried that San Francisco County Medical Society reject the whole of Section 22 of the report of the House of Delegates, as published on pages 243 and 244 of the June State Journal.

At a special meeting of the Board of Directors held June 16th it was moved that the mandatory instructions sent by the San Francisco County Medical Society be received, and their import conveyed to the Council of the State Medical Society.

Seconded and carried, with two dissenting votes. No section meetings were held in June.

SAN JOAQUIN COUNTY.

The regular monthly meeting of the San Joaquin County Medical Society was held at the residence of Dr. Fred P. Clark, Friday evening, May 29th. The following members were present: Drs. J. D. Dameron, S. E. Latta, L. Dozier, C. F. English, Minerva Goodman, W. J. Backus, H. E. Sanderson, Mary Taylor, Margaret Smyth, B. J. Powell, C. R. Harry, S. P. Tuggle, F. P. Clark, J. T. Davison and R. T. McGurk, with Dr. W. I. Terry of San Francisco as guest.

The minutes of the last meeting were read and approved. A communication from the American National Red Cross was read relative to establishing a corps of physicians in this community to be at the call of the National Red Cross. On the motion of Dr. McGurk, seconded by Dr. Harry, the following committee was appointed to investigate the advisability of the same: Drs. W. J. Backus, B. J. Powell, Minerva Goodman.

Dr. Terry read an excellent paper on "Anoci Association." Inasmuch as the introduction of Anoci Association as an aid to modern surgery is now looked upon as a permanent and logical procedure, the paper was of great interest to local surgeons. Like most new things, this method is not in general use, and there are those, who having had excellent results thus far with the old methods, are not enthusiastic in its support, but who will not deny the fact that this method is the logical one in nervous and hysterical patients and in those who have cardiac or renal complications.

The discussion was opened by Dr. English, who told of having seen this method used by Crile and Cushman a year and a half ago in the East, and he was very much in favor of operating with this method. Dr. Powell stated that in his work on tonsils, he had found the use of Anoci Association to be quite an advantage. Dr. Dozier stated that he had taken up the giving of oxygen-nitrous-oxide anesthesia at the urgent request of some local surgeons and he believed its use would become more general as surgeons became familiar with its advantages. Dr. Dameron said that he had had good results without the use of Anoci Association or of nitrous oxide anesthesia, and that while he did not deny that the method was excellent for certain cases, as a matter of general routine, he believed it would be a long time before the present method would be replaced by it.

At the conclusion of the discussion, the members were invited to partake of refreshments.

R. T. MCGURK, Secretary.

PROSECUTIONS UNDER THE LAW.

Sacramento, Cal., June 30, 1914.

Dr. P. M. Jones,
Secretary, State Society,
San Francisco.

Dear Doctor:

Enclosed herewith please find attorney's report as to the progress of prosecution of violators of the Medical Practice Act in the northern section of the state, which may be of interest to the readers of the California State Journal of Medicine.

Respectfully yours,

C. B. PINKHAM, Secretary.
June 12, 1914.

Dr. Charles B. Pinkham,
Secretary, Board of Medical Examiners,
San Francisco, California.

Dear Doctor:

On behalf of the Legal Department for San Francisco and Alameda Counties, I beg leave to submit the following report of violators of the Medical Practice Act of cases pending and arrests made, from March 28, 1914, to June 13, 1914:

Wong Shue Nin, convicted April 1; probation for two years.

M. Fleishman, convicted April 21; probation for two years.

C. W. Wong, convicted April 13; probation for two years.

C. E. Blanchard, dismissed April 1.

L. H. Schwerin, dismissed April 27.

R. R. Smith, convicted April 1.

Chow Juyan, convicted June 10; \$600 and six months.

Chow Let, acquitted June 10.

Tom J. Chong, pending June 13.

Yet Lee, dismissed June 11.

Ida Rennie, dismissed June 11.

Chow Juyan, pending June 13.

Chow Let, pending June 13.

W. T. Allen, dismissed June 11.

Y. Q. Gine, pending June 13.

I also desire to report the discontinuance of business of the following unlawful medical institutions: M. S. Cheneweth, M. D., Inc.; Globe Medical Company, California Medical Dispensary, The Nat King Specialists, Modern Specialists, Dr. Lee Co., Woman's Remedy Company, Raymond Remedy Company, Cook Medical Company, Prof. Blanchard and Son, Vera Vita Company, C. W. Wong Company, Vita Vigor Company, San Francisco Medical Laboratory.

Respectfully,

(Signed) LOUIS H. WARD,
Attorney.

DEPARTMENT OF PHARMACY AND CHEMISTRY.

Edited by FRED I. LACKENBACH.

THE DIVORCEMENT OF THE PROFESSION OF PHARMACY FROM THE DESTRUCTIVE ELEMENTS OF THE DRUG BUSINESS.

Medicine in its practical development is largely dependent upon the science and art of Pharmacy. The community of interest between these professions is such that influences detrimental to the one must inevitably reflect upon the integrity of the other. The pharmacist as a member of a historic and honorable calling should be well above the trickeries and practices of the charlatan and quack. The physician in self-defense should be the first to frown upon and rebuke vicious practices. Incompetency; substitution of inferior, contraband or fictitious products; the sinister bribe and special discount evils; demoralizing and ruinous cutting of prices, are parasitic upon all legitimate endeavor and should be countenanced by no self-respecting member of either profession.

The great strides made in medical science in the past decade or two have rendered the pharmacy of our forefathers obsolete. Not only have recent developments revolutionized the science and art of pharmacy but the commercial aspects of the situation are certain to bring about very momentous changes. The pharmacist must, to retain his professional identity, deliver himself from the heterogeneous hodgepodge which commonly characterizes

his environment. He has reached the "parting of the ways" and must either devote himself to the broader and humanitarian aspects of his art, or apply himself to the purely commercial pursuits of the tradesman-druggist. For him to essay the former and at the same time center upon the latter, is a corollary and deception which cannot longer endure.

It is this type of hybrid druggist-pharmacist which has permitted the unprecedented development of the great *pharmaceutical octopus*. Those great manufacturing establishments have long since outgrown the purposes for which they were created—the production of legitimate pharmaceuticals—and have developed into gigantic proprietary-medicine enterprises. The essential differences between these quasi-reputable establishments and the old-time out-and-out patent-medicine faker, are in the methods of exploitation. The old-time faker approached and appealed direct to the laity. The great pharmaceutical manufacturer, under the cloak of respectability, enlists the active co-operation of both doctor and druggist, and through these influential mediums, establishes himself with the public. Once entrenched, his position is well-nigh impregnable.

The source of large profit to the pharmaceutical manufacturer is the "specialty" in which a proprietary (patent or trademark) interest is maintained. The physician, through extensive advertising and personal solicitation, is induced to prescribe these multitudinous specialties, taking the producer's word for it that they possess exceptional virtues. The druggist in turn, lacking the power of discrimination and ability to advise with his medical confreres, falls readily into line, taking it for granted that if the doctor prescribes the nostrum, it must be all right.

Not satisfied, and as a further means of expansion, the octopus reaches out, through its "private formula" department, to the promoters of lay patent-medicine enterprises, and millions of pills, tablets and other preparations are supplied for public consumption. The manufacture of the majority of "patent" medicines on the market, is in the hands of the great pharmaceutical manufacturing establishments. They have the facilities and can do this work better and cheaper than any small concern. A concern exploiting a line of female preparations was put out of business by the U. S. postal authorities in San Francisco some months ago. The line of suppositories, tablets, etc., was manufactured by a Detroit firm known throughout the world. A representative of this pharmaceutical house bemoaned to the writer, the loss of this "fat" business! These gigantic enterprises laboring under enormous expense, cannot be too particular as to the source of their profits. Competition, the necessity for constant expansion and the payment of generous dividends, are other factors which impel the addition of new therapeutic "novelties" to the already bewildering lists.

The great army of druggists appear oblivious to the part they are induced to play in this great scheme of exploitation. Or, in an effort to re-

habilitate the dwindling exchequer, form co-operative organizations for the manufacture of their own lines of proprietary specialties.

A new and distinct type of man must evolve from this state of pharmaceutical demoralization. The professional pharmacist—the man of scientific attainment and high character—must step into the breach and redeem his lost estate. There are few fields so large and promising as the pharmaceutical field for men of the proper caliber.

The scarcity of good pharmaceutical timber is largely accounted for by the avidity with which the octopus "gobbles up" promising talent, to be converted into detail men, branch house managers, and members of the "scientific" staffs. It is further accounted for by the failure on the part of the colleges of pharmacy to attract and develop the proper material. The status of pharmacy as typified in "the drug business" is not calculated to attract men of exceptional abilities.

Finally, the hold the octopus has upon the colleges of pharmacy through endowments, scholarships, and "interlocking directorates" is not conducive to independent thought and the development of progressive ideals upon the part of the student body; not to mention the muzzling influence of the great pharmaceutical interests upon the medical and pharmaceutical press, from which the main source of revenue is derived.

The one great hope of the broad-minded progressive pharmacist, as also the physician, is the work of the Council on Pharmacy and Chemistry of the American Medical Association.

Let all that is good and worthy in both professions, aid in every way possible, the great work of the Council. Therein lies the salvation of *pharmacy as a profession!*

NEW AND NONOFFICIAL REMEDIES.

Since publication of New and Nonofficial Remedies, 1914, and in addition to those previously reported, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Nonofficial Remedies":

Electrargol.—Electrargol is a colloidal solution of silver, containing silver, equivalent to 0.25 per cent. metallic silver. It is said to be useful in febrile diseases, even in those which are not of a septic character. It is also used externally in inflammatory conditions. For subcutaneous, intramuscular or intravenous injections, electrargol is supplied as Electrargol for Injection in ampoules containing 5 Cc. For external use electrargol is supplied as Electrargol for Surgical Use in bottles containing 50 Cc. (Jour. A. M. A., June 6, 1914, p. 1808).

Refined and Concentrated Tetanus Antitoxin.—Marketed in packages containing 5,000 units (curative dose) put up in syringe containers. E. R. Squibb and Sons, New York (Jour. A. M. A., June 13, 1914, p. 1890).

Culture of Bulgarian Bacillus, Mulford.—A pure culture in tubes of the *Bacillus bulgaricus*. It is designed for internal administration for the purpose of establishing lactic-acid-producing bacilli in the intestines and for external use. H. K. Mulford Co., Philadelphia, Pa. (Jour. A. M. A., June 13, 1914, p. 1890).

Lactobacilline Tablets.—A pure culture of the *Bacillus bulgaricus*. These tablets give rise to the production of considerable quantities of lactic acid,

which tends to restrain the growth of putrefactive organisms in the intestines. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1890).

Lactobacilline Liquide, Culture A.—A pure culture in tubes of the *Bacillus bulgaricus* grown in a neutralized sugar bouillon, each tube containing from 5 to 6 Cc. Its actions and uses are the same as those of Lactobacilline Tablets. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Liquide, Culture D.—A pure culture in tubes of the *Bacillus bulgaricus* grown in a neutralized bouillon. Its action and uses are the same as those of Lactobacilline Tablets. Marketed as Lactobacilline Liquide, Culture D., Small—containing 5 Cc., and Lactobacilline Liquide, Culture D., Large—containing 16 Cc. in each tube. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Liquide, Infant's Culture.—A pure culture in tubes of the *Bacillus bulgaricus* in a whey medium. It is employed in the treatment of diarrhea or dysentery in nursing infants or young children. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Glycogene Tablets.—Tablets containing pure cultures of the *Bacillus bulgaricus* and the *Glycobacter peptolyticus*. The *Glycobacter peptolyticus* transforms into sugar the amylaceous substances in the diet, thereby furnishing a pabulum for the *B. bulgaricus*, which in turn transforms the sugar into lactic acid. These tablets are designed for the prevention and treatment of intestinal diseases. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Glycogene Liquide.—A pure culture in tubes of the *Bacillus bulgaricus* and the *Glycobacter peptolyticus*. Its action and uses are the same as those for Lactobacilline Glycogene Tablets. Marketed as Lactobacilline Glycogene Liquide, Small—containing 5 Cc., and Lactobacilline Glycogene Liquide, Large—containing 16 Cc. in each tube. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Milk Tablets.—Tablets containing pure culture of the *Bacillus bulgaricus* and *Bacillus paralacticus*. These tablets are used in the preparation of scientifically soured milk. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Suspension.—A pure culture in tubes of the *Bacillus bulgaricus* grown in a neutralized bouillon medium. This culture tends to inhibit the growth of deodorant, putrefactive and pathogenic organisms and is used externally in various suppurative conditions. Marketed as Lactobacilline Suspension, containing 5 Cc. and Lactobacilline Suspension, Surgical, containing 20 Cc. in each tube. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Lactobacilline Milk Ferment.—A pure culture in tubes of the *Bacillus bulgaricus* and *Bacillus paralacticus*. Its actions and uses are the same as those of Lactobacilline Milk Tablets. Franco-American Ferment Co., New York (Jour. A. M. A., June 13, 1914, p. 1891).

Prophylaxis of Tetanus.—The following procedure is advised: Remove every particle of foreign matter from the wound. Dry the wound and treat every part with iodine or cauterize it with a 25 per cent. phenol solution and apply a wet pack saturated with boric acid solution or alcohol. Inject as soon as possible, intravenously or subcutaneously, 1,500 units of antitetanic serum and repeat the injections if indications of possible tetanus arise. In no case close the wound, but allow it to heal by granulation (Jour. A. M. A., June 20, 1914, pp. 1964 and 1971).

The Absorption of Iron.—The belief that organic compounds of iron were superior to inorganic iron salts arose before it was known that the bowel forms the most important channel for the excretion of this element, when the failure to find an increase in the amount of iron eliminated with the urine by means of the kidneys after ingestion of the element in some form or other was taken as an indication that it had not been absorbed. To-day it is known that iron can be absorbed and excreted by the intestinal wall. Experiments have demonstrated that both inorganic and organic iron can be absorbed and satisfactorily carry out the purposes for which iron is administered (Jour. A. M. A., June 13, 1914, p. 1913).

Liquid Albolene.—This is a light variety of liquid petrolatum marketed as a proprietary medicine, exploited in an objectionable manner and with more or less misleading claims. It is said to come from Russia and differs from American products in being entirely nonfluorescent—an immaterial difference (Jour. A. M. A., June 27, 1914, p. 2048).

Cystogen.—At a meeting of physicians recently, the question was asked: Why is Cystogen, which is just plain hexamethylenamin, not recognized by the Council on Pharmacy and Chemistry? The answer is simple: Because the therapeutically suggestive title as well as the method of exploitation encourage its indiscriminate and ill-advised use, both by the medical profession and the public (Jour. Mo. State Med. Assn., June, 1914, p. 473).

Scopolamin-Morphin Anesthesia.—McClure's Magazine for June contains a sensational account of the use of scopolamin-morphin in anesthesia as used by Krönig and Gauss at Freiburg. In America the scopolamin-morphin anesthesia has received little attention. It is far from safe and can be carried out only in hospitals. Morphin and scopolamin should not be used in fixed proportions (Jour. A. M. A., June 6, 1914, pp. 1815 and 1829).

Glyco-Heroin, Smith.—A report of the Council on Pharmacy and Chemistry explains that Glyco-Heroin, Smith, although containing 1/16 grain heroin to the teaspoonful, is exploited in a way to encourage self-drugging by the layman. The advertising matter suggests the administration of Glyco-Heroin, Smith, to children and much of it has contained the evident falsehood that this heroin mixture does not produce narcotism or habituation. The possibility of habit formation should be sufficient to induce the thoughtful physician to avoid the use of Glyco-Heroin, Smith (Jour. A. M. A., June 6, 1914, p. 1826).

Malt Nutrine.—This product of the Anheuser-Busch Brewing Association was declared misbranded by the government authorities because the label claimed that it was a highly concentrated extract of malt, which was untrue. Malt Nutrine was found to contain 1.6 per cent. alcohol and extravagant therapeutic claims were made for it (Jour. A. M. A., June 20, 1914, p. 1981).

Buffalo Lithia Water.—The fallacy that diseases are due to uric acid and the fallacy that lithium would eliminate the uric acid has made mineral waters highly profitable—even when lithium was present only in infinitesimal amounts. One of the most widely used "lithia waters" was Buffalo Lithia Water, later called Buffalo Lithia Springs Water, which has been declared misbranded by the Federal Courts because it was shown to contain less lithia than does Potomac River water and that a person would have to drink 150,000 to 225,000 gallons of the water to obtain an ordinary dose of lithia. The testimonials certifying to the high efficiency of Buffalo Lithia Water and its superiority to lithium compounds given in the past by physicians eminent in their profession, certify to the unreliability of clinical observations (Jour. A. M. A., June 13, 1914, p. 1909).

DR. VAUGHAN'S REPORT ON STANFORD.

University of Michigan,
Ann Arbor,
Department of Medicine and Surgery,
Office of the Dean.

June 9, 1914.

President J. C. Branner, Leland Stanford Jr.
University, Palo Alto, Cal.

Dear Doctor:

In compliance with your telegraphic request I have visited Palo Alto and San Francisco and inspected the libraries, laboratories and hospitals of Stanford University. The laboratories of chemistry (general, physical, inorganic, organic and physiological), biology, histology, neurology and physiology are well housed, adequately equipped and exceptionally well manned. In all these, high grade work is being done. The laboratories of bacteriology and anatomy need better housing and I understand that this is to be provided in the near future. But in the buildings now occupied, most excellent work is being done. In fact, each of the scientific departments at Stanford is under the direction of an eminent man supplied with able and enthusiastic assistants and with necessary equipment. There is abundant evidence even in a hasty inspection that the appropriations have been economically and wisely expended and that good work is being done both in instruction and in research.

I wish to compliment the Trustees and President upon the evident wisdom which they have displayed in the development of these departments of the University. What I have said of the scientific branches is equally true of the other departments of Stanford University. Although one of the youngest of the higher institutions of learning in this country Stanford ranks as one of the best in all departments, both scientific and humanistic. In all branches it represents the highest aims and ideals. While I am not fitted to express anything more than a general opinion as to other than scientific education I wish to emphasize the fact that all learning is one, and the same spirit should pervade the whole. This I believe to be true at Stanford. It furnishes a wholesome atmosphere in which the student can grow, whatever special line of training he may follow later.

The greatest need of our country is the man whose fundamental knowledge is broad and comprehensive and whose special training is exact. No man can have useful knowledge of a part unless he has general knowledge of the whole. The working of the part must be in harmony with the movements of the whole; otherwise disaster is the result. While I am especially interested in medical education, I recognize the fact that it is futile to try to develop a good medical man out of one whose fundamental training has not been sound. The young man who has learned to work with the right spirit, whether it be in Greek or biology, in philosophy or chemistry, will enter medicine, law or any profession in the right frame of mind and will be likely to prove an honor in his chosen profession. In his preliminary college training the prospective medical student should not be confined to the physical or biological sciences. It is desirable that he know the classics, history and philosophy, and it is most desirable that the training that he gets along these lines should be of the highest grade.

I believe that Stanford University furnishes suitable conditions for the development of the young man who is going into medicine. Therefore I hope that the medical work done at Palo Alto may continue. If the medical school should be closed, this would relieve Stanford of only one of the laboratories at Palo Alto. Physics, chemistry, biology, physiology, histology, embryology, neurology and bacteriology must be taught and research work in these branches must be done in a

university of the high rank Stanford holds. Closing the medical school would give only trifling financial relief to the University. I therefore recommend that the premedical and medical work now done at Palo Alto be not only continued but be developed as fast as the finances of the University permit. I make this recommendation not only for the good of the medical school, but, as I believe, in the interest of the University as a whole. If the Medical Department should be discontinued, anatomy is the only subject which could be dropped at Palo Alto and even this should not be done. Anatomy is one of the great and fundamental biological sciences and even human anatomy should be taught in a great scientific University. Anatomy is no longer taught as a mere foundation for medicine and surgery. It includes the development of structure from the lowest to the highest forms of life.

I went to San Francisco and made inspection of the library, hospital and laboratories of the medical school.

The Lane library is one of the best medical libraries in the country. It is supplied with practically all the best medical journals so arranged as to be most available to members of the faculty and students. Its location in regard to the hospital and laboratories is quite ideal. It is worth much to both the clinical and the research man to have at his hand the best contributions of the world. When a problem comes up for solution the first thing to learn is to ascertain what has already been done along this line. A medical school without a library is like a boat without a pilot and much time is likely to be lost in drifting. The medical department of Stanford is fortunate in the possession of its library.

While the present hospital building is somewhat out of date, it is, so far as I can see, admirably managed both in caring for the sick and in the instruction of students. The outpatient department systematized as it is, is both a great, broad and needful charity and at the same time a source of varied and comprehensive instruction to students. The addition soon to be made to the hospital will modernize the institution. It will bring more pay patients to the institution and thus furnish the funds with which the less fortunate can be cared for. I was greatly pleased with the management of the hospital. The laboratories in the hospital are ably conducted and fairly well equipped. Some of them will probably have enlarged and improved quarters when the addition is made to the hospital.

As I understand, the total cost of the medical department is now about \$100,000 per year. This cost will slowly increase. Notwithstanding this fact I strongly urge that the medical school be not only continued but be developed. In its development the quality of its work should be constantly held in mind. The number of medical students should be kept small. Quality and not quantity should be the aim. I believe that in the near future the medical department will be a source of strength to the University in many ways. First, in the importance of the research done and the benefits that such research will confer on the race. Within the past thirty years the average human life has been increased nearly fifteen years and the whole life has been made more comfortable. This is a work to which a great University should contribute. The opening of the Panama Canal will bring to the Pacific Coast many health problems which can be best solved in such a school of instruction and research as I believe Stanford will develop. Second, I am firm in the belief that the medical school will attract large donations, both for research and the clinical work. Philanthropists will see that the best service they can render lies in the direction of improved health conditions. Third, medicine is now attracting to its ranks many of the best

of our young men and this will be a source of strength to the University.

Lastly, I come to the matter on account of which I was called to visit you. The time may come when it may be wise to consolidate the two University medical schools of San Francisco, but I do not believe that this would be wise at present. Stanford, from what I can learn, can afford to develop its medical school without material hindrance in the growth of other branches and I believe that this is the wise thing to do.

I am aware of the fact that a hasty visit such as I have made may give erroneous impressions and I would not have you attach any great importance to this report, but I have tried to look at matters from a broad viewpoint and to hold constantly in mind the good of Stanford University as a whole. I have considered it unnecessary to go into financial or other details with which you are much more familiar than I am.

In conclusion I wish to thank you and other members of your faculty for the many courtesies shown me and to express the hope that the growth of Stanford University during the past quarter of a century, phenomenal as it has been, may be surpassed in its future developments.

With great respect, I am

Yours most respectfully,

V. C. VAUGHAN.

FULL TIME TEACHING SECURED.

Delivery will be made in July at Baltimore of securities valued at \$1,500,000, presented by the General Education Board to the Medical School of Johns Hopkins University. This gift is to be known as the William H. Welch Endowment for Clinical Education and Research.

The securities will be accepted on behalf of Johns Hopkins Medical School by Mr. R. Brent Keyser, chairman of the Board of Trustees. The actual transfer of the principal of this fund to Johns Hopkins University signifies that an important and novel feature relating to the gift will have become an accomplished fact, namely, that the organization of the Medical School should be so arranged that the entire income from this fund could be utilized for the support of full-time teaching and research departments of Medicine, Surgery, and Pediatrics, or diseases of children.

The express proposal made by the trustees of the Johns Hopkins University was that in reorganizing these three departments, professors and their assistants should hold their posts on the condition that they become salaried university officials, and that they accept personally no fees whatever for any medical or surgical services which they might render.

The hospital wards and out-patient departments are to be under the control of the university medical or surgical teachers, but over and above their work in the public wards, the teachers are to be free to render any service required in the interest of humanity and science. They are to be free to see any patient they desire to see.

Patients, however, of the usual private patient type, will pay a reasonable fee to the University, rather than to the professors personally. The time and the energy of the professors are to be fully protected, not only because their salary eliminates financial interest on their part, but because they are themselves to become sole judges as to whether or not particular cases shall or shall not command their personal attention.

In order that the time and energy of the professors thus safeguarded might be properly utilized under favorable conditions, the endowment was made large enough to provide adequate salaries to attract the ablest professors and also to pro-

vide them with assistants, well-equipped laboratories, books, and other necessary facilities.

Simultaneously with the completion of the reorganization of the Johns Hopkins Medical School in accordance with this new plan, the University trustees have chosen Dr. Theodore C. Janeway, hitherto Professor of Medicine at Columbia University, to become Professor of Medicine of the Johns Hopkins Medical School, the position once held by Sir William Osler.

The chair of Surgery at Johns Hopkins, under the full-time arrangement, is to be occupied by Dr. William S. Halsted, most of whose surgical career has been passed in the Johns Hopkins Medical School, where, since the establishment of the Johns Hopkins Hospital, Dr. Halsted has been its Surgeon-in-Chief and Professor of Surgery.

The chair of Pediatrics will be occupied by Dr. John Howland, who was called a year ago from the Professorship of Pediatrics at Washington University, St. Louis, and appointed physician in charge of the Harriet Lane Home for Invalid Children, this institution being the pediatric clinic of Johns Hopkins Medical School.

Johns Hopkins will become the first medical school to be placed upon the full-time basis in all departments. A grant of \$750,000 has been made to Washington University, St. Louis, and of \$500,000 to the Medical School of Yale University, upon an understanding that they also reorganize their work so as to put their clinical teaching upon a full-time basis.

The full-time scheme is a plan to ensure to hospital work and medical teaching the undivided energy of eminent scientists whose efforts might otherwise be distracted by the conflicting demands of private practice and clinical teaching. The full-time scheme is an appeal to the scientific interest and devotion of the clinician, and it is significant that the first three full-time posts created have been filled by men of conspicuous professional standing, all of whom have made great sacrifices in order that they might enjoy ideal conditions for clinical teaching and investigation.

It should become of increasing consequence to the public that the training of those studying to become doctors should be in charge of the most competent men obtainable, devoting their entire time to this work. Greatly increased efficiency and thoroughness should result, to the alleviation of suffering and the cure of disease.

THE GENERAL EDUCATION BOARD.

DEATHS.

Briggs, Evelyn, Sacramento.
 Wilhite, W. J., Modesto.
 Reed, R. C. S., Los Angeles (died July 8, 1909).
 Seifert, Geo. W., San Jose.
 Newlin, Wm. L., died in Los Angeles.
 Garcelon, Frank, Pomona, Cal.
 Davis, Sheldon F., Pomona.
 Palmer, Chas. Thomas, Los Angeles.
 Bowles, Geo. R., Ukiah (died in Berkeley, Cal.).
 Cuthbert, Wm. L., Long Beach (died in St. Petersburg, Florida).

NEW MEMBERS.

Van Tine, H. C., Boulder Creek, Cal.
 Gambotto, C. A., Santa Cruz.
 Jamison, Wm. T., Arbuckle.
 Hall, L. P., Dixon, Cal.
 Russell, Jno. I., Lakeview, Oregon.
 Fox, Mearle C., Lakeview, Oregon.